THE OIL WEEKLY

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The Oil Man's Calendar

FEB.	
12–15	A.I.M.E., New York.
23	American Petroleum Institute, Illinois Basin Chapter, Division of Production, Mt. Vernon, Ill.
MAR.	
14–15	American Petroleum Institute, Mid-Continent District, Division of Production, Wichita, Kansas.
19	American Petroleum Institute, Pacific Coast District, Division of Production, Los Angeles.
28–29	American Petroleum Institute, Southwestern District, Division of Production, Houston, Texas.
31	Western Petroleum Refiners Association, Wichita, Kansas.
APR.	
9–11	Society of Exploration Geophysicists, Chicago.
10–12	American Association of Petroleum Geologists, Chicago.
11–12	American Petroleum Institute, Eastern District, Division of Production, Columbus, Ohio.
16–18	Southwestern Gas Measurement Short Course, Norman, Okla.
18–19	National Petroleum Association, Cleveland, Ohio.
26–27	Petroleum & Natural Gas Conference, State College, Pa.
MAY	
1– 3	Petroleum Industry Electrical Association, Dallas, Texas.
6–10	American Gas Association, Natural Gas Section, Houston.
15–17	Natural Gasoline Association, of America, Tulsa.
16–18	National Oil Scouts and Land Man's Association, Little Rock, Arkansas
18–25	International Petroleum Exposition & Congress, Tulsa.
27–31	American Petroleum Institute, Mid-Year Meeting, Ft. Worth, Tex.
JUNE	
1	Illinois-Indiana Petroleum Association, Robinson, Ill.

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THE OIL WEEKLY

FEBRUARY 12, 1940

VOLUME 96 NUMBER 10

The Week's Panorama

ALTHOUGH industrial production so far this year has been somewhat under the all-time peak level of December, movement of goods into the hands of consumers has continued large, and employment has held up remarkably well.

Current Operations . . . . . .

Recognizing the danger of surplus gasoline, the industry has curtailed operations at refineries, and crude production also has been cut back. Nevertheless, extremely cold weather has continued to aggravate the over-supply of gasoline and the relatively small inventories of fuel oils.

Crude oil production and refinery runs were reduced in the week ended February 3. But gasoline production showed an increase, in the face of lagging demand, with the result that gasoline stocks rose 1,423,000 barrels higher. Meanwhile, both light and heavy fuel oils again were taken out of storage in substantial quantities.

At the new level of 89,337,000 barrels as of February 3, gasoline stocks were within 4,000,000 barrels of the all-time peak of March 19, 1938. They were 11.5 percent larger than one year ago, when they totaled 80,089,000 barrels.

Tourists and War . . . . . .

Domestic demand for gasoline is expected to be stimulated materially next summer by increased tourist travel resulting from the wars in Europe. It is believed that many tourists who would have gone to Europe under peace-time conditions will travel this year in the United States.

Oil in Germany . . . . . .

Reports from Bucharest indicate that passenger and other train service between there and Budapest has been reduced to make way for increased oil shipments from Rumania to Germany.

Germany is said to be seeking, meanwhile, to lease tank cars from Belgium, and may be successful by agreeing, in return, to increase shipments of coke to the latter country.

Oil in Mexico . . . . . .

President Cardenas of Mexico recently stated that the Mexican government was purchasing oil tankers for exporting its production. He declared that the government would cling to the properties it had expropriated and pay for them under valuations now in progress. He contended that submission of the matter to international arbitration was not justified, as the controversy was wholly between the government and private interests. . . . Mexico would cooperate, according to the president, if the Pan-American nations should consider suspension of sales to belligerents.

Utilities Buy Oil . . . . . .

New records were established in 1939 in consumption of oil and gas for the generation of electric power as power production rose 12 percent higher than in 1938 and reached a new all-time high. Use of oil, gas and coal gained relatively more than power output, moreover, as production by water was down 2 percent, due partially to low water conditions at many hydro-electric plants.

Diesel Locomotives . . . . . .

Foreshadowing increased consumption of fuel oil by the railroads is the current trend toward wider use of Diesel locomotives, although the railways even in the past have been among the larger users of fuel oil, employing it in both steam and Diesel-type locomotives.

In 1939, there was a sharp increase in the proportion of Diesel units among the locomotives put into use. Of 261 locomotives shipped in 1938, 112 (43 percent) were Diesels. But among the 356 sold in 1939, 254 (71 percent) were Diesels.

The 356 locomotives shipped in 1939 included 77 steam, and 25 electric and other types.

Trucks Busy . . . . . .

The trucking industry continues to increase in importance as a customer of the oil business. Despite labor difficulties in some sections and seasonal declines in shipments, highway motor vehicles in December continued to move more freight than a year ago, the gain for the month having been 13.1 percent over tonnage handled in December, 1938.

Unemployment . . . . . .

Chronic unemployment has been pointed out as a serious flaw in the economic system; and the assertion has been made that great and lasting prosperity would result if the millions of unemployed were fitted into jobs where they could earn and spend, instead of being supported by the tax money of the employed. How to achieve the needed utilization of the energies of the unemployed is, therefore, a major problem; and some economists contend that the only solution is a division of employment imposed by government. After an original adjustment, it is reasoned, the power of the government to guarantee jobs would result in stable buying power, prevent panicky retrenchment by business, and thus assure maintenance of both production and consumption at high levels.

State Officials Unanimously

Cole subcommittee is told such measures are unnecessary, undesirable and repugnant to the best interests of nation, people and industry

LABELING the Cole bill in uncomplimentary terms ranging from "bureaucracy" through "subversive legislation" to "communism of natural resources," governors and conservation officials of a number of oil-producing states last week unanimously and uncompromisingly opposed enactment of the administrations oil control plan before a House Interstate and Foreign Commerce subcommittee.

Meanwhile, opposition to federal control legislation reached the Senate floor. Senator Capper (Rep., Kan.) told the Senate "there are certain matters which in my judgment fall in the sphere of federal regulation. But the regulation of a private industry, such as the production of petroleum, does not, in my judgment, fall into this category.

Testifiers the past week were state governors and conservation officials. Representatives of the oil industry are scheduled to present 18 witnesses later, probably around February 19.

Keynoter for the state executives was young Governor Payne Ratner of Kansas, who told the subcommittee frankly that he thought the bill was wrong and urged that neither that type of legislation nor any form of federal control is necessary.

Governor Leon C. Phillips of Oklahoma, who has bitterly assailed the measure at every opportunity, summed up the situation for state officials after several witnesses appeared. He declared the bill a "hazardous experiment which would stifle free enterprise" and contrary to principles of democratic government.

Ratner Testifies

The increasing experience of ten years of waste-prevention has resulted in the establishment of a state agency full prepared to cope with any of the numerous problems arising out of conservation," Kansas' Governor Ratner said. "If some states, lacking experience as major oil-producing states, have not enacted adequate conservation laws, the states which have should not be penalized by unnecessary federal regulation."

Outlining the cooperation between the federal government, the states and the industry which has developed current conservation policies, Governor Ratner agreed that "it is necessary and desirable to restrict the production of individual wells to prevent waste of gas, loss of pressure and undue encroachment of water," but held that "such restraints as are imposed upon an individual well must take into consideration the rights and equities of its owner and also of the owners of other wells" and pointed out that "it is significant that the Cole bill does not recognize that any rights or equities are involved for it does not contain a single provision which mentions proration or correlative rights."

—Harris & Ewing

Governor Payne Ratner of Kansas told the committee that 10 years of experience in waste-prevention has qualified oil states to cope with any problem arising out of conservation.

Price Not Fixed

Had proration been used to fix prices, as has been charged, he said, there would have been a steady and continuous increase in crude prices over the past few years rather than their maintenance at a rather well stabilized level, and the recent tendency to weaken would not have been exhibited.

"Under a program of sound and sane balance between supply and demand there is no occasion for any substantial amount of any commodity such as crude oil to sell for long below its cost of production," Governor Ratner explained. "Nor are the best interests of the consuming public well served thereby because the continuation of such a situation will reduce, if not eliminate, the ever necessary search for additional reserves to supply future demands.

"The Cole bill does not propose to meet this situation. It does not propose to enable the industry to maintain reserves adequate to assure the national defense. On the other hand, it does propose to permit the industry to produce large quantities of oil daily in excess of economic requirements, if the wells producing the oil can do so without causing physical waste therein and if storage facilities are available, and I submit storage of crude oil above ground is economic waste."

Since the federal government has no police power, he contended, it cannot pass laws designed to promote the general welfare on that ground alone; on the other hand, the states do possess such powers, and cannot only enforce conserva-

Denounce Federal Oil Control

tion but also legislation designed to promote the discovery of adequate reserves by assuring the prosperity of the industry and thereby promoting the general welfare of the state.

"As developed within the last ten years, and particularly within the last five, state conservation presents an example of mutual cooperation within an industry, and with the state and federal governments, a control which prevents waste and tends toward a reasonable economy but without rigid regimentation," he declared. "Competition remains keen and aggressive, the number of individual oil producers shows annual increases, private initiative has not been destroyed. New inventions and technological improvements continue and better products have been constantly supplied to the public at reduced prices.

"The enactment of the Cole bill will destroy the inherent rights of the states to exercise their police power to conserve their natural resources. The state and federal governments would attempt to supervise the same pools and, although the industry would be thoroughly regulated, the producers themselves would be confronted with serious dilemmas. The states would prescribe certain regulations while the federal commissioner, due to differences of opinion between experts, might prescribe different rules. The producers would attempt to serve two masters but their task would be an impossible one; the inevitable result would be a conflict between state and federal authority. Ultimately the matter would be brought to the attention of the courts and the result might be that the states would be compelled to yield to the federal regulations.

"Why should penalties of the kind the Cole bill would impose be inflicted upon the states which have enacted and enforced conservation laws?"

The governor pointed out that the bill vests the commissioner with "extremely great power" which would be exercised over production, which has never been held by the courts to constitute interstate commerce. If it is the contention of the government that production shall constitute interstate commerce, he argued, it will be necessary for the government to regulate every industry in all of its aspects, for there is no basic commodity which does not flow in interstate commerce and if one can be controlled, all can be.

However, he added, "in view of the position I have taken, I am not unmindful that the federal government has a definite place in the oil picture. Cooperation between the federal and state governments is

[*Continued on page 48*]

Governors Payne Ratner of Kansas, John E. Miles of New Mexico, Roy E. Ayers of Montana, Ralph L. Carr of Colorado, Carl E. Bailey of Arkansas, Nels H. Smith of Wyoming and Leon C. Phillips of Oklahoma talked to Committee Chairman William P. Cole after a formal hearing session.

—Harris & Ewing

Drilling Activity Continues High in January

Decline from December is seasonal, and field work remains exceptionally brisk for initial month . . . February may bring further gain

By L. J. LOGAN, Associate Editor

DESPITE the usual seasonal decline from December, drilling activity in the United States was exceptionally great in January, well completions having set a new record for the initial month, in slightly exceeding those of January, 1937.

Mid-winter weather nearly always slows down drilling, and the extremely severe conditions of January this year were particularly retarding. But much work had been under way in December, and operations were not lowered greatly from the high December levels. Consequently, January, 1940, completions were comparable with those of mid-summer in each of the past four years except 1937, when drilling was around the highest levels on record.

The January record furnished evidence of high hopes for the oil business in 1940, as producers apparently felt confident that satisfactory markets as well as good demand for oil lay ahead.

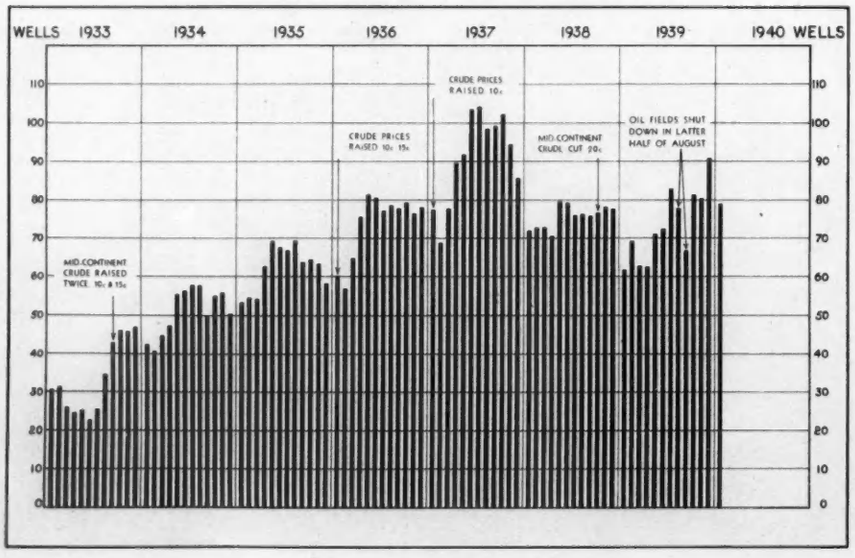
Especially conducive to field work were the higher crude prices in the Appalachian district, drilling having been at relatively high levels in January in Pennsylvania and New York, while other Eastern States also were active.

However, practically all other sections of the country, including most states of the Mid-Continent and the Rocky Mountain region, also furnished relatively large numbers of completions.

California's recent crude price cut came February 1 and therefore did not have any effect on completions in January.

Relatively few areas are less active now than a year ago, completions for January having been less numerous this year than last year only in Arkansas, Colorado, Kentucky, Eastern Texas, North Texas, Southwest Texas, and the Texas Gulf Coast.

Average Number of Wells Completed Daily in U. S.
(By Months, January, 1933-January, 1940)



January Results

After having averaged 90.5 daily in December, an all-time record for the final month, United States well completions declined to 78.9 daily in January, a record, similarly, for the initial month.

The January, 1940, drilling was 29 percent greater than that of January, 1939, when completions averaged 61.2 daily.

Presented herewith are figures showing the amount of drilling that has occurred in January in each of the years from 1933 through 1940.

January of:	Average Number of Wells Completed Daily
1933	30.5
1934	42.4
1935	53.1
1936	60.0
1937	77.2
1938	71.9
1939	61.2
1940	78.9

February Prospects

February frequently furnishes fewer average daily completions than January, because of adverse weather, but it is indicated that this year the field development

may not show much, if any, decline in February. For rigs in operation February 1 were slightly greater in number than those active on January 1. The active operations February 1, 1940, were 10 percent more numerous than those of February 1, 1939, with most states and districts showing increases.

Some Areas Show Gains

Although the drill was slowed in January in a large number of areas, it was accelerated in some districts, including Arkansas, Mississippi, North Texas, Wyoming, and Pennsylvania, where average daily completions were higher than in December.

Daily completions held around the December levels in California, North Louisiana, Michigan, New Mexico, the East Texas field, the Laredo District of Southwest Texas, the Texas Gulf Coast, and West Texas.

But fewer wells per day were completed in January than in December in the remaining areas, including Illinois, Indiana, Ohio, Kentucky, West Virginia, New York, Montana, Oklahoma, Kansas, South Louisiana, Eastern Texas outside the East Texas field, the Corpus Christi and San Antonio areas of Southwest Texas, the Texas Panhandle and West Central Texas.

Above Year Ago

As compared with January, 1939, completions of January, 1940, were more numerous in all but comparatively few districts. The exceptions, where field work was less active in January of this year, included Arkansas, Colorado, Kentucky, Eastern Texas, Southwest Texas, and the Texas Gulf Coast.

Montana furnished more than three times as many completions in January, 1940, as in the initial month of 1939; and more than twice as many were reported in Wyoming, Pennsylvania, North Texas, and South Louisiana; while nearly twice as many were recorded in New York, New Mexico, the Texas Panhandle, and West Central Texas. North Louisiana furnished 64.5 percent more new wells in January, 1940, than in January, 1939, Michigan 47.2 percent more, Kansas 40 percent more, Ohio 34.1 percent more, and California 32 percent more; while other increases included those of 29.8 percent in Illinois, 28.2 percent in Indiana, 14.2 percent in West Texas, 7.4 percent in West Virginia, and 7.1 percent in Oklahoma.

Rigs in Operation

Rigs in operation in the United States February 1, 1940, as reported by the staff men of this publication, were somewhat more numerous than a month previously and 10.1 percent greater in number than one year before. Total operations as of February 1 number 3987, compared with 3924 on January 1 and 3583 on February 1, 1939.

These figures included wells drilling, rigging up, or temporarily shut down.

The February 1, 1940, total of 3987 operations included 2837 wells drilling, 403 rigging up, and 747 temporarily shut down.

Change from Month Ago

Although the number of active operations changed but slightly from January 1 to February 1 for the United States as a whole, having shown a small increase, some districts and states showed considerable increases or decreases.

Having exceeded the general trend, Illinois experienced a gain in field work. Rigs in operation in the state increased to 447 as of February 1 from 318 on January 1. On February 1, 1939, Illinois had 326 active rigs.

Indiana, similarly, had a pick-up in drilling during January, and the active rigs on February 1 were

[*Continued on Page 43*]

January Drilling This Year Around Highest Level Ever Reached in Initial Month

STATE OR DISTRICT	*WELLS COMPLETED			DETAILS OF 1939 DRILLING				BARRELS PRODUCTION		
	January 1940	January 1939	Percent Change	Oil	Gas	Dry	Initial Production	January 1940	January 1939	Percent Change
Arkansas	19	29	— 34.5	15	1	3	4,914	2,170,700	1,586,450	+ 36.8
California	128	97	+ 32.0	113	1	14	80,415	18,912,400	19,388,300	— 2.4
Colorado	1	2	— 50.0	....	...	1	.....	126,700	128,200	— 1.2
Illinois	336	259	+ 29.8	263	4	69	121,929	10,894,200	4,254,750	+156.0
Indiana	42	11	+ 28.2	22	6	14	3,716	3,077,200†	2,926,100†	+ 5.1
Kansas	142	101	+ 40.5	109	3	30	138,193	5,308,100	4,573,200	+ 15.5
Kentucky	32	77	— 58.4	19	1	12	1,258	†	†	.....
Louisiana	147	74	+ 98.5	110	8	29	28,642	8,381,200	8,142,600	+ 2.9
South Louisiana	96	43	+123.2	80	1	15	25,346	6,253,050	5,924,700	+ 5.5
North Louisiana	51	31	+ 64.5	30	7	14	3,296	2,128,150	2,217,900	— 4.0
Michigan	134	91	+ 47.2	77	5	52	22,988	2,018,500	1,546,900	+ 30.5
Mississippi	16	....	.....	9	1	6	4,417	108,000	.....	.....
Missouri	....	....	.....	....	....	....	.....	.....	.....	.....
Montana	17	5	+240.0	10	2	5	905	537,250	427,950	+ 25.8
New Mexico	82	48	+ 71.0	61	3	18	27,784	3,230,200	3,059,650	+ 5.5
New York	106‡	55‡	+ 92.6	106‡	...	...	612	†	†	.....
Ohio	106	79	+ 34.1	44	38	24	296	†	†	.....
Oklahoma	182	170	+ 7.1	97	11	74	39,309	13,024,600	13,036,150	— 0.1
Pennsylvania	255‡	118‡	+116.0	163‡	61	31	301	†	†	.....
Texas	928	851	+ 9.1	678	27	223	403,537	41,573,500	40,532,600	+ 2.6
East Texas Field	26	82	— 68.2	23	...	3	41,310	12,228,800	11,762,000	+ 3.9
Rest of East Texas	24	28	— 14.3	7	6	11	6,922	2,487,300	2,886,700	— 13.8
North Texas	221	105	+110.0	158	2	61	83,736	2,502,950	2,488,750	+ 0.6
South Texas	238	251	— 5.2	142	7	89	48,635	6,452,450	7,355,950	— 12.3
Corpus Christi Area	109	110	— 0.9	79	2	28	36,408	.....	.....	.....
Laredo Area	105	106	— 0.9	56	5	44	10,572	.....	.....	.....
San Antonio Area	24	35	— 31.4	7	...	17	1,655	.....	.....	.....
Texas Gulf Coast	114	153	— 25.5	87	3	24	25,198	7,090,400	6,665,050	+ 6.4
Texas Panhandle	54	29	+ 86.4	49	5	...	16,608	2,505,700	1,988,650	+ 26.2
West Texas	193	169	+ 14.2	183	...	10	160,606	7,324,200	6,448,200	+ 13.6
West Central Texas	58	34	+ 70.5	29	4	25	20,522	981,700	937,300	+ 4.6
West Virginia	72	67	+ 7.4	15	39	18	149	†	†	.....
Wyoming	18	8	+125.0	13	2	3	5,883	1,999,100	1,521,400	+ 31.4
Total United States	2,763	2,142	+ 29.1	1,924	213	626	885,239	111,460,650	101,124,250	+ 10.2

* January completions cover not the calendar month, but the five weeks, or 35 days, ended January 27.
† Total production for group of states usually designated as "Eastern," including Pennsylvania, New York, West Virginia, Kentucky, Indiana and Ohio.
‡ Includes water-input wells.

Oil Companies Earn More In 1939 Than In 1938

By virtue of a surprising recovery of earning power in the final quarter, the oil industry probably will show somewhat more profit for 1939 than for 1938.

This prospect is noteworthy, inasmuch as the profits of oil companies in the aggregate were probably 25 to 30 percent smaller in the first 9 months of 1939 than in the corresponding months of 1938.

In view of that record for the first 9 months, it had appeared inevitable that 1939 as a whole would fall short of 1938 in the yield of profits for the industry, despite betterment of earnings in the third quarter and additional improvement in the closing months of the year.

But along with most other industries, the oil business experienced a remarkable expansion of earning power in the final quarter of 1939, as volumes of business increased materially, while realized prices for petroleum products appreciably improved.

Some companies earned approximately as much in the fourth quarter as in the first three quarters combined; they included Phillips Petroleum Company, Shell Union Oil Corporation, and The Texas Corporation. One company (Tide Water Associated Oil Company) reported that earnings for the fourth quarter of 1939 were the best for any quarter in its history.

Only a few concerns had been able to report more profit for the first 9 months of 1939 than for the corresponding months of 1938, but through benefit of the improved conditions of the final quarter, half of the oil companies that have reported on the past year's results have shown larger earnings for the full year 1939 than for 1938. In some instances the gains over 1938 were small, but two large companies showed gains of about 33 and 41 percent, respectively, while another reported more than twice as much net income in 1939 as in 1938.

The larger gains for 1939 over 1938 were reported by the integrated companies, as markets for refined products showed noteworthy improvement in the closing months of the year. On the other hand, solely producing companies had experienced a relatively better year than integrated companies in 1938, and they were not able in some instances to equal the 1938 record in 1939, because of more strictly curtailed production and because of lower average crude prices, postings having remained throughout 1939 at the levels to which they were reduced in October, 1938.

Prices of lubricants advanced precipitately in the latter part of 1939, beginning around September 1; and prices of other products also improved. The gains have been generally held until now, with exception of those made by gasoline. Even gasoline prices were well maintained throughout November, although they began to decline in December.

Presented in the accompanying table are figures on the reported or estimated earnings of 12 oil companies for 1939, compared with profits in 1938. The group is fairly well representative of the industry, inasmuch as it includes a substantial proportion of integrated companies as well as some solely producing companies, while also reflecting operations in all sections of the United States.

Earnings of 12 Oil Companies 13.9 Percent Larger for 1939 Than for 1938

Net profits after all deductions, including interest, depreciation, depletion, amortization, federal taxes, minority interests, etc.

	1938	1939	Percent Change
Atlantic Refining Co.	$4,310,913	*$5,028,000	+ 16.6
Barnsdall Oil Co.	2,837,897	†1,900,000	— 33.1
Margay Oil Corp.	342,416	†230,000	— 32.7
‡Mission Corp.	1,427,829	†1,175,000	— 17.7
Phillips Petroleum Co.	9,049,122	†9,340,000	+ 3.2
Richfield Oil Corp.	2,042,955	†2,725,000	+ 33.4
Shell Union Oil Corp.	11,318,423	*11,800,000	+ 4.3
Skelly Oil Co.	2,650,054	2,360,783	— 10.9
Sun Oil Co.	3,085,119	*6,959,677	+125.6
Texas Corp.	23,139,030	†32,630,000	+ 41.2
Texas Gulf Producing Co.	766,000	†585,000	— 23.6
Tide Water Associated Oil Co.	10,427,273	*6,607,000	— 36.6
	$71,397,031	$81,340,460	+ 13.9

* Preliminary figure.
† Estimated.
‡ Principally a holding company, with stock in Tide Water Associated Oil Company, Skelly Oil Company and Pacific Western Oil Corporation.

The 12 companies in the aggregate earned approximately 13.9 percent more in 1939 than in 1938, their combined net income having risen to about $81,340,460 from $71,397,031.

Half of the 12 showed gains. Sun Oil Company's earnings more than doubled, and other noteworthy increases were those of 41.2 percent for The Texas Corporation and 33.4 percent for Richfield Oil Corporation. Net income was 16.6 percent larger in 1939 than in 1938 for The Atlantic Refining Company, 4.3 percent larger for Shell Union Oil Corporation, and 3.2 percent better for Phillips Petroleum Company.

Decreases in 1939 profits, as compared with earnings of 1938, included those of 36.6 percent for Tide Water Associated Oil Company, 33.1 percent for Barnsdall Oil Company, 32.7 percent for Margay Oil Corporation, 23.6 percent for Texas Gulf Producing Company, 17.7 percent for Mission Corporation, and 10 percent for Skelly Oil Company.

Although the oil industry's earnings for 1939 were better than anticipated some months ago, they were unimpressive in the light of the experience of business in general. For other lines profited much more by the acceleration of business in the latter part of the year. The first 100 major companies that made public their results in 1939, including concerns in all lines, reported approximately twice as much profit as in 1938. Only one oil company in the above mentioned group of 12 did that well, and the 12 in the aggregate did not greatly improve on their 1938 records.

Further improvement of earning power is promised for oil companies in 1940, in view of indicated additional increases in volumes of business and better average prices. But optimism is tempered by the threat of protracted low prices for gasoline.

Varying Well Conditions Individualize Lifting

By BRAD MILLS, Associate Editor

sents numlems that ariety of ons vary ll, and in operators months in ost effecs. Lower declining nfluencing of lifting whole are acking the lifting problem with open mind, and several of the largest companies have installed various types of production equipment to meet specific conditions.

Both gas lift and pumping are being used in the field, with the former now in the lead. As the field becomes older this is likely to change however.

The field is spotted, and lack of uniformity from one well to another must be considered in any extensive production program. The field does not present more difficult problems than have been solved in other lime belt areas, and production methods found most effective will be generally adopted regardless of competition from opposing camps. Successful use of more than one lifting method is indicated for large groups of wells, and final selection of equipment will be largely a matter of personal choice.

Of the 1100 producing wells in the field, more than half are still flowing naturally, about 250 wells are on gas lift, 75 are being produced with plunger lift, and around 110 are on the pump. Of the gas-lift wells, about 220 use valves or intermitters of various types, and around 30 are on straight gas lift. Most of the pumping wells use conventional rods and tubing.

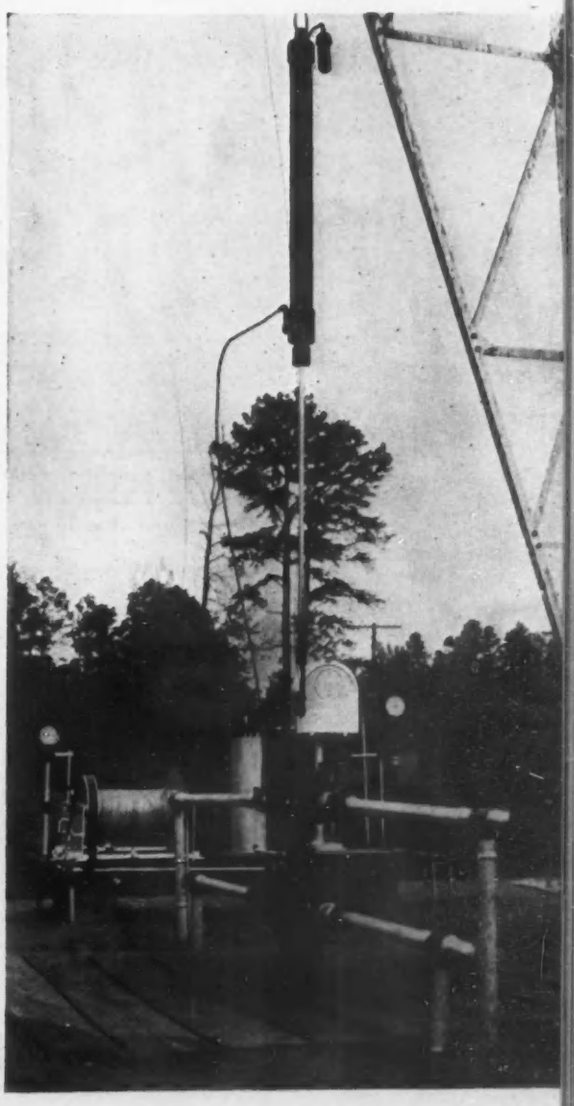
Gas lift has been a popular producing medium because of the availability of a dependable gas supply, and other conditions favorable to the method. Flow valves of several types have been used satisfactorily and recently a gain in intermitter type installations was noted. Despite a good gas supply, operators attempt to lift oil with a minimum input of outside gas.

Use of intermitting type gas lift has proved effective in several parts of the field. This method principally employs surface control equipment for injecting gas at regular intervals, surface-controlled starting and flow valves in the tubing string, weight bar, packer between the tubing and casing, standing valve near bottom, and perforated bull plug.

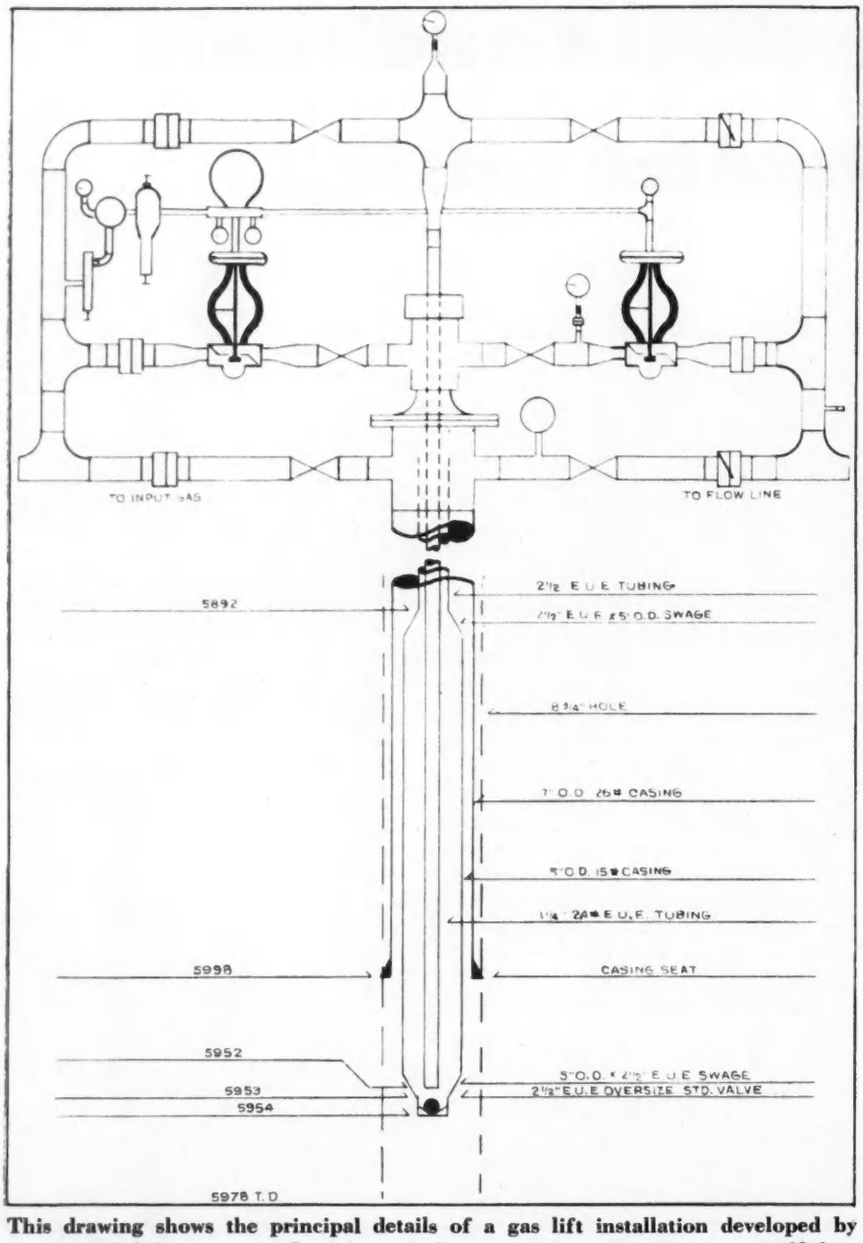
Operation of Intermitter

The intermitter is a surface device that times the flow, controls production, and operates the flow valves. Its operation is controlled by a special clock that is equipped with a notched wheel to cause the well to flow at regular and predetermined intervals. Operation is by gas pressure taken from the gas supply line. A regulator valve reduces the pressure before the gas enters the intermitter, the reduced pressure remaining constant and extending from the regulator valve to the clock and motor valves.

The motor valve is opened by pressure when a notch in the timing wheel passes over the clock valve lever arm, raises the arm and opens the clock valve. The open motor valve permits pressure to flow on through and up into the weight cylinder. The weight bar that is suspended on a wire line in the tubing is pulled into the flow valve by pressure entering the weight cylinder, the flow valve is opened, and operating gas pressure is admitted to the tubing to bring



Intermittent type gas lift installations, such as the one shown, are widely used. Complete surface equipment incidental to operation of submerged valves may be seen.



This drawing shows the principal details of a gas lift installation developed by Standard Oil Company of Louisiana. A feature of the arrangement is a 60-foot by 5-inch O.D. chamber that is run on the bottom of the 2½-inch tubing.

the fluid to the surface. Fluid reaching the surface operates the release valve and relieves the pressure beneath the piston in the weight cylinder. This action lowers the weight bar out of the flow valve, and gas pressure in the casing closes the flow valve.

This completes the operating cycle. Frequency of the flow periods is controlled by notching on the clock wheel, clocks with a 1-, 2- or 6-hour period of revolution being used to meet requirements.

From 2 to 5 flow valves are placed in the tubing string, but only one valve is regularly used. After the well has been cleared, a check is made to determine which valve is to be operated by the intermitter. The well is checked or cleared by applying pressure to the annular space between the casing and tubing, and successively operating the valves (from top to bottom) with the weight bar. This opening and closing of the valves in downward sequence clears both the casing and tubing of fluid and permits determination of the level to which the fluid will rise in the tubing in a given period. The weight bar is suspended immediately below the valve to be used, when the operating level has been established, the wire line connecting this weight bar and the weight cylinder piston rod at the surface.

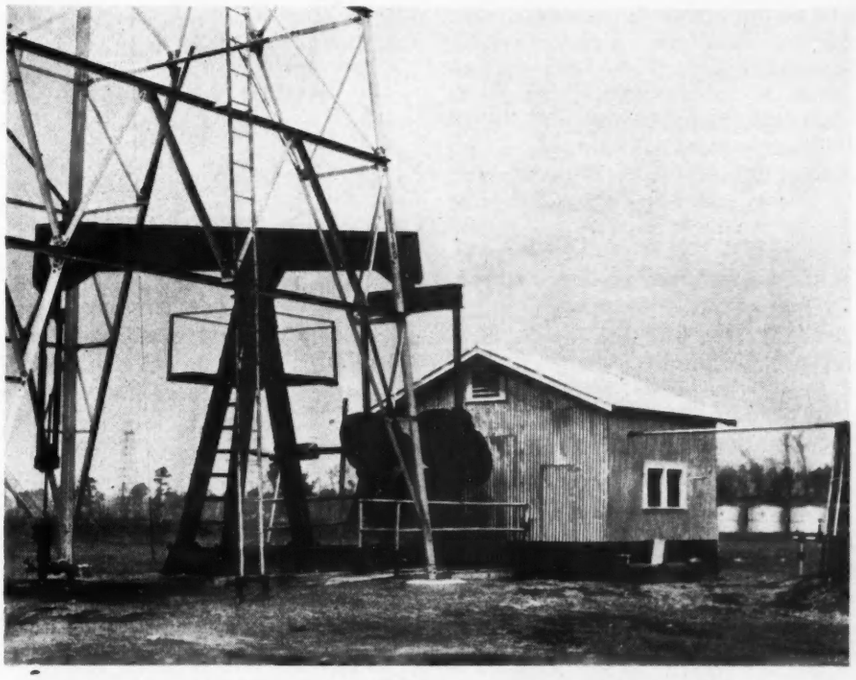
The intermittent cycle may vary from 10 minutes to an hour. Operating pressure is around 300 pounds, with 2½-inch tubing and 7-inch casing. The flow valve remains open only long enough to permit entry of adequate gas to bring the slug of fluid to the surface, and the annular space between casing and tubing is not bled of gas pressure. Input gas varies from 700 to 2000 cubic feet per barrel of fluid lifted.

Simple System Gives Good Results

Standard Oil Company of Louisiana has developed a simple gas-lift system that has given good results in several wells. The two-string installations consist principally of a time cycle controller and two motor valves with the necessary drips and regulators; two check valves, one for the flow line and one for the casinghead outlet; one 3-inch by 1¼-inch tubing head for the suspension of the inner string, and necessary fittings for well-head connections.

In the well a 5-inch O.D. chamber 60 feet long is run on bottom of the 2½-inch tubing and is fitted with a 2½-inch oversize standing valve. The chamber is run to as near bottom as formation structure will safely allow. The 1¼-inch tubing is then run to within one foot of the standing valve. Due to the large displacement ratio between the outer tubing with its chamber and the 1¼-inch tubing, it is necessary to kick the well off by injecting gas down the 1¼-inch tubing and flowing through the annular space. Ordinary procedure consists merely of adjusting the time-cycle control to the proper intervals that are dependent upon the operating pressure and fill-up rate of the well.

When the input valve is opened and gas is admitted to the annular space between the two tubing strings, the fluid that has accumulated in the chamber is displaced into the 1¼-inch tubing. At the present producing rate and time cycle the submergence is approximately 65 feet in the chamber. The displacement ratio is 8.76. Height of the fluid column is therefore lengthened to 570 feet when it is transferred to the 1¼-inch tubing, which is well above minimum submergence for efficient lift from 6000 feet. The input-motor valve timed to close two minutes before



A typical pumping installation used by Standard Oil Company of Louisiana. Two-cylinder vertical gas engines are popular with this company.

the fluid head reaches the surface. The 6-minute allowance for blowdown is sufficient to empty the flow line and lower the pressure to 300 pounds. The exhaust valve then opens and equalizes the remaining pressure with the operating pressure of the separator. In this instance the exhaust valve remains open 10 minutes. By referring to the drawing accompanying this article, it will be noted that the check valve placed in the casinghead outlet prohibits pressure from building up in the casing annulus. This item is necessary, as experience has proved the sensitivity of the formation to back pressure. The arrangement is such that the producing formation may be fully utilized, most of the outside help or lift being confined to the tubing and macaroni string. The standing valve permits easy entry of oil into the bottom chamber but prevents outside pressure from reaching the formation when gas is injected into either the 2½-inch or 1¼-inch tubing.

Plunger Lift

Plunger lifts are being extensively used in the field. These installations operate by using the energy of the gas associated with the oil, or with additional gas when weaker wells are involved. The equipment consists principally of a special string of smooth-bore tubing, in which a metal plunger travels the entire distance from top to bottom of the tubing and back to the top during each stroke. The plunger fits loosely enough in the tubing to fall by gravity, and is raised by gas pressure. The tubing is supported from a flow head at the surface that is adapted to receive the slug of oil lifted by the plunger and direct it to the flow line. It is fitted at the lower end with a foot piece to stop the plunger and close the plunger valve.

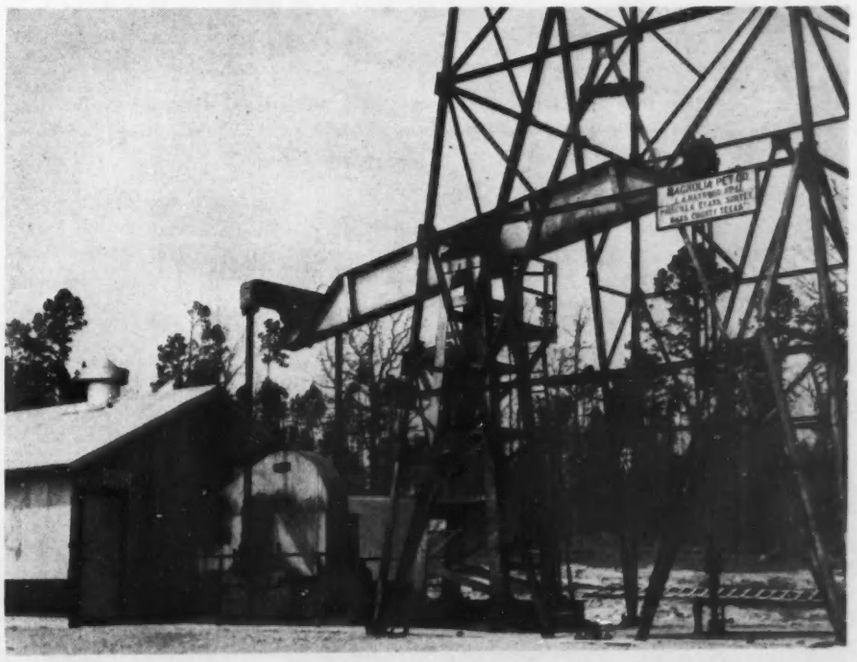
Ordinary flow valves are used in the stronger non-flowing wells, but where the formation energy has sharply declined, additional gas must be injected.

Valves used with intermitter units are adapted to certain wells at Rodessa. Such installations are made when a regular flow valve begins to blow around the bottom before the well allowable is made, or when the rising casing pressure has to be reduced to allow fluid to fill the hole. Use of this type intermitter unit permits leaving the casing pressure on the well at all times. The valve opens only as the fluid builds up to a predetermined height, and closes after the fluid has been brought to the surface.

Many of the flow valves or "kickoff" valves have been installed to operate with intermittent installations, where additional gas must be used to form gas-lift operations.

Conventional Pumping Units

Pumping has been slow to gain a foothold at Rodessa, but several large operators are considering more extensive use of this production method. Recent experiments have placed conventional pumping units in a more favorable light, as reflected by an increase to more



This heavy pumping unit is located only a few hundred feet from the Louisiana line, in the Texas sector of the field. Units of this type easily handle the heavy sucker rod strings largely used.

than 100 units of various types. One company that formerly frowned on pumping units now has more than 30 active installations in the field.

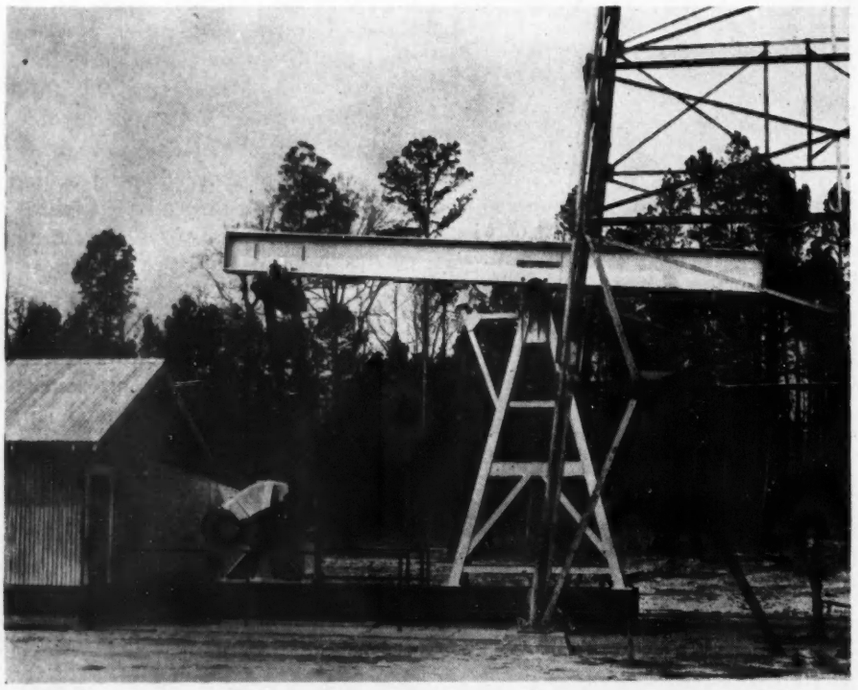
Wells best adapted to pumping have been those making a limited amount of fluid. Free gas has caused little trouble. In the gassy wells, perforation below the pump has eliminated the trouble. Several operators fear for the success of beam pumping in wells producing a high percentage of salt water with a modest amount of oil. This fear is largely theoretical, however, since it has not been difficult to pump successfully several wells making considerable water. One large operator believes it will be possible to pump the average well to advantage before placing it on some form of gas lift, while another company thinks exactly the opposite procedure should be followed.

In pumping wells with a low fluid level, the principal strain on equipment is caused by the heavy "natural" load handled. In wells making a high percentage of water and having a satisfactory fluid level, the chief strain on equipment is caused by the speed of operations necessary to lift the required amount of fluid.

Fluid level and the ability of wells to produce fluid uniformly will be important factors determining the economic possibilities of beam pumping. If the field goes to water along Smackover or Hendrick limes, only a high fluid level and heavy flow of fluid will make pumping operations attractive. A very low fluid level accompanying serious water encroachment would force operators to fight strenuously to lift the required amount of fluid.

In wells now producing almost clean oil from low fluid levels, it is difficult to predict what effect a change to a heavy water percentage would have on fluid level. The average depth of Rodessa wells (around 6000 feet) does not lend itself to pumping wells with both a high percentage of water and low fluid levels. It is not difficult to pump a satisfactory quantity of clean oil from 5600 feet, but the same quantity of oil lifted with three times as much water probably would not be a profitable undertaking.

Speculation on the probable pressure, formation and fluid changes during the next two years has been a factor that has checked pumping operations among several companies. A number of prejudices, both favorable and unfavorable to pumping, have developed in the field. Only time will break down these prejudices, or establish them as facts. The field as it now stands offers the only safe subject for discussion.



Pumping units of this type have been installed on several Rodessa wells. Gas engines are almost exclusively used for power because of the steady supply of fuel.

Detailed Well Study

Union Producing Company is making a detailed study of every well to determine the best lifting medium. Some of these wells are influenced by gas drive, others apparently by a more pronounced water drive. This company has tried almost every type of artificial lift, but has found no uniformity in performance from one well to another. A similar lack of uniformity in equipment also was noted from well to well. This company was slow to accept beam pumping as a promising producing medium for the field as a whole, but has been hesitant to place the method in the doubtful class for wells of a certain type.

Recently the company started pumping operations on a modest scale, and now has from 30 to 40 pumping installations in different parts of the field. About 2000 feet of 1-inch and 4000 feet of ⅞-inch rods are used in a string, and 1¼-inch pumps are extensively used. Experiments are being conducted to determine whether it is better to use small pumps 24 hours daily or larger (1¾-inch) pumps about 12 hours daily.

Standard Oil Company of Louisiana has a number of pumping installations in the field and they are giving good service. Problems encountered are not more serious than those found in other fields of similar depth.

Several sucker-rod combinations are used to meet varying well conditions. The full ⅞-inch string, ⅞- and ¾-inch string, and 1- and ⅞-inch combination are used. In the ⅞-¾ combination, from 2000 to 2500 feet of ⅞-inch is used on top and about 3500 feet of ¾-inch. In the heaviest rod strings, from 1000 to 1500 feet of 1-inch is used above about 4500 feet of ⅞-inch rods. In the full ⅞-inch string, the rods are run to around 5900 feet. Medium corrosive-resisting, high-tensile sucker rods are used in all sizes.

Insert, liner and fluid-seal pumps of various types are ordinarily used. The company standardizes on 2½-inch tubing. Tubing anchors

are not generally used because of caking of salt. Gas engines are almost exclusively used for power. Various types of single- and two-cylinder, 40-60-horsepower engines are favored. A two-cylinder vertical gas engine has proved particularly satisfactory on several wells.

The average 40- to 60-horsepower outfit can pump from 100 to 400 barrels of fluid daily with insert pumps, operating at from 15 to 17 strokes per minute and employing 50-, 60- and 74-inch strokes. The fluid level ranges from 3000 feet off bottom to a point near bottom in various wells. Spotty porosity and permeability are conspicuous factors.

Trouble with Salt Caking

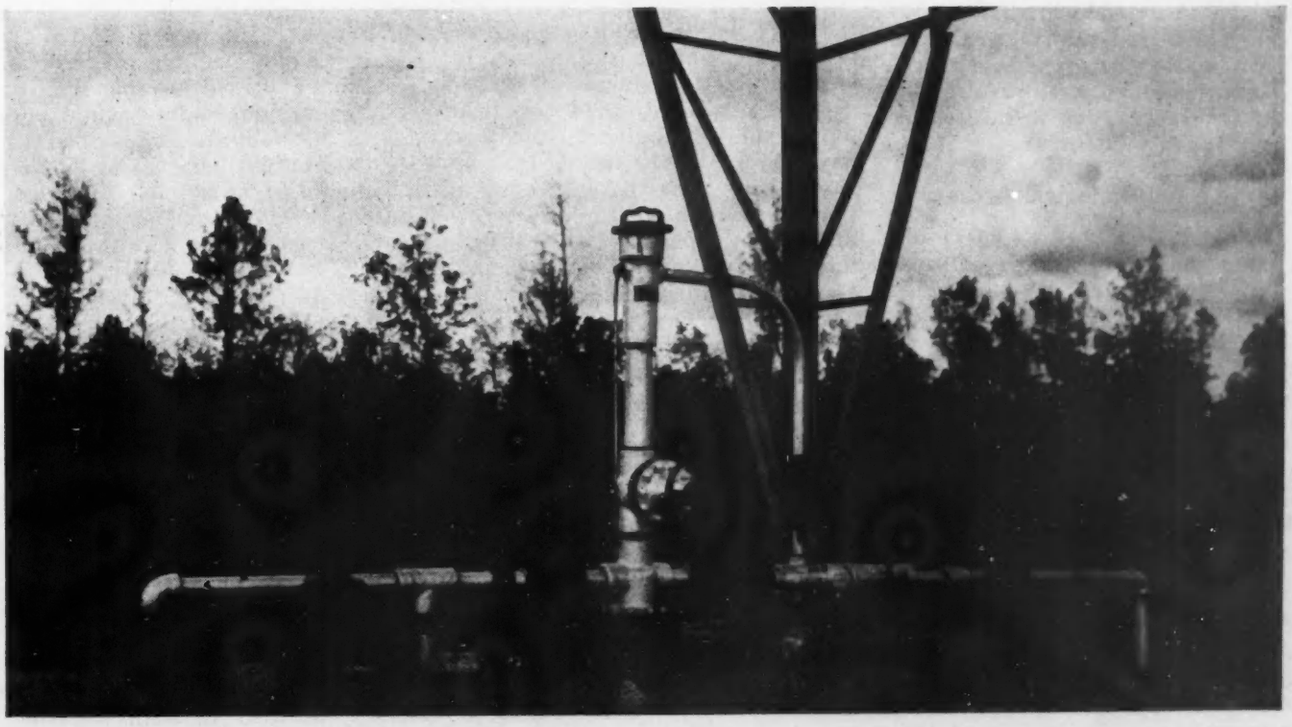
Magnolia Petroleum Company perhaps has the most ambitious pumping program under way, with about 25 wells on the beam. This operator is mostly pumping wells with low fluid levels, the fluid standing from a point near bottom in a few producers to about 500 feet from bottom in the better wells. The pumps are set about 30 feet off bottom, and gas anchors are not ordinarily used. Salt caking in the tubing causes some trouble. Since this trouble has been confined largely to wells making little or no salt water, it is believed the salt is in the oil. From 20 to 350 barrels of fluid are handled daily through 2½-inch tubing. Considerable trouble from gas lock was reported during early pumping operations, but the company has developed a gas anchor that controls the troublesome gas.

The company has been careful to use sucker rods of adequate strength, a precaution that has overcome objections advanced by operators who feared rod trouble in the 6000-foot strings. A typical rod string includes about 2000 feet of 1-inch on top and about 3950 feet of ⅞-inch on bottom. Wells are pumped at 15 to 18 strokes per minute, with strokes ranging from 48 to 76 inches. The standard deep-well pumps used include the insert, liner and fluid-seal types, with the 1¾-inch size being most popular. Sand and abrasive matter, do not cause much trouble.

Gas is plentiful for fuel, a condition influencing the almost exclusive use of gas engines for prime movers on pumping units. Most of the pumping installations are of the rugged, permanent type, and haphazard methods employed in shallower fields are entirely absent. One large operator, however, is installing medium-weight units and rod strings and will install heavier equipment when the load increases.

Production at Rodessa is obtained near the top of the Lower Glen Rose of the Lower Cretaceous. The best wells have been completed at about 6000 feet in the lower section of the upper third of the Lower Glen Rose. The principal producing zones in order are the Hill, Gloyd and Dees. The Dees formation, principal producing zone in the field, has a maximum thickness of 90 feet. The formation varies from a true sand to a very sandy limestone with interbedded shales. The coquina limestone is very porous, while the oolitic sandy lime section completing the lower part of the Dees horizon is porous and "mealy."

The low fluid level in clean wells does not present a serious obstacle, unless excess gas is present. A reasonable amount of water can be handled in wells showing a fairly uniform fluid level. The fear of some operators that many wells will eventually go to water and that a beam pump will be unable to handle a sufficient quantity of fluid applies mostly to wells already showing a tendency toward water. Speculations and suppositions are rife as to probable obstacles in store for pumping wells, but with proper study of conditions it is safe to assume that beam pumping will prove profitable in several parts of the field.



Plunger lift installations have increased at Rodessa, and about 75 of the type shown are in daily operation.

Western Oklahoma Receiving Increased Exploration

By BEN ALTMAN, Staff Writer

DEEP drilling in Western Oklahoma during 1939 may be the steppingstone to future exploration in the area embracing the Anadarko Basin, Ardmore Basin and the Western Oklahoma Basin which continues in Kansas as the Dodge City Basin.

Four tests have been drilled while a fifth is making a deep hole in Dewey County. In Washita County, Continental Oil Company drilled to 14,582 feet at Proctor 1, C NW 28-10n-20w, 7 miles southeast of Elk City. At this depth the drill was yet in Pennsylvanian formation, topped at 6577 feet. A show of gas at 10,896-920 feet failed to show commercially and the hole was plugged. This wildcat revealed thick sand bodies, which if prevalent in other areas such as Caddo and Custer, might be productive zones. The drill was expected to enter the Mississippian horizon nearer 15,000 than 20,000 feet. The Mississippian section is considered to be of normal thickness throughout Northwestern Oklahoma except where truncated by the Wichita uplift to the south.

Several Geological Areas

Washita, Caddo and Grady counties have the deeper formation affected by the Wichita uplift and therefore may be geologically distinguished from areas such as Canadian, Kingfisher, Blaine, Woodward, Major and Harper counties where a thick section of Mississippian has been deposited without interruption. In the Western Oklahoma Basin beds below Pennsylvanian dip steeply. Deposition of sediments of Pennsylvanian age reach a thickness exceeding 10,000 feet in some areas. In Washita County the deepest deposit is encountered around Cordell. The Springer formation, included in the Mississippian section, makes correlation of well logs a difficult task due to its variable thickness.

In Kingfisher and Canadian counties a thinning of Pennsylvanian occurs to the northwest while upper Pennsylvanian strata dips approximately 16 to 20 feet per mile to the southwest. At the top of Oswego lime this dip has increased 45 to 60 feet per mile and increases considerably with depth. A distinct line of folding may thrust the Wilcox sand to a high which may be reached by the drill in these two counties. The previous theory that the line of folding through Kay, Noble and Garfield counties extends into this area is now doubtful. A test in Kingfisher County was completed for 12 barrels of high-gravity distillate and 2,500,000 cubic feet of gas from dolomitic lime at 7357-60 feet. This lime would not take acid, being too hard and tight.

Caddo County

Caddo County has long sought deep production since the Binger discovery. A Binger producer topped the Wellington at 2560 feet, Sayre lime at 3270 feet and found pay in sand zone at 9900-83 feet in Pennsylvanian. Near Carnegie, a thinning in upper formations brings the Pennsylvanian, Mississippian, Devonian, Silurian and Ordovician nearer the surface than at any part of the region. Sinclair Prairie Oil Company found numerous shows of dead black oil at German 1, SW NW NW 1-6n-13w, near Carnegie, on the terrace structure along the north slope of the truncated Wichita uplift. Wilcox sand was found saturated at 9184-88 feet with a bleeding core of black oil recovered. Previously it was believed the Wilcox sand could not be reached by drill within less than 10,000 to 15,000 feet in many parts of the basin area. The sand was topped at 9175 feet in Sinclair Prairie Oil Company's test. A relatively thin section of Mississippian, 3200 to 7034 feet, was cut due to truncation. German 1 started in Chickasha formation and had Pontotoc at 1950-2500 feet. Because of the irregularities of Pennsylvanian sediments below the Permian in the Anadarko Basin, it is difficult to correlate well logs after the drill passes out of Permian into Pennsylvanian.

Two distinct types of Pennsylvanian sediments are characteristic of Caddo County; those laid down on horizontal strata before the Wichita uplift and the eroded deltaic material similar to the Pontotoc series. Binger proved commercial production in the terrace-like structure northeast of the Anadarko Basin in the northern portion of the county. Simpson production is more apt to be commercial in the southwestern area off the flank of the uplift. Permian and Pennsylvanian both are productive in the folded anticlinal structure of Cement pool. Several tests have drilled to the Wilcox sand in Caddo County while one in the Cement district drilled to 10,079 feet without basing Pennsylvanian. In this pool it is estimated the Wilcox lies approximately 20,000 feet below the surface.

Permian through Ordovician offer horizons favorable to the accumulation of petroleum in the basin area of Western Oklahoma. Permian and Pennsylvanian, productive in the Cement pool, show good possibilities in the deeper section of the basin. Flanking the Washita uplift, Pennsylvanian formations are trapped by truncation and offer another source for accumulation.

Blaine and Dewey counties lie on the northeast and north line, respectively, of the Anadarko Basin. Regional dip is to the southwest and west in both counties. To date no commercial production

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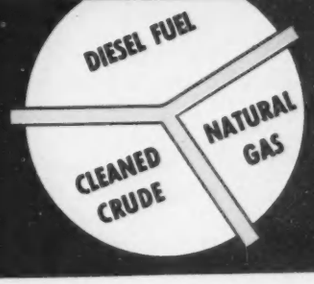

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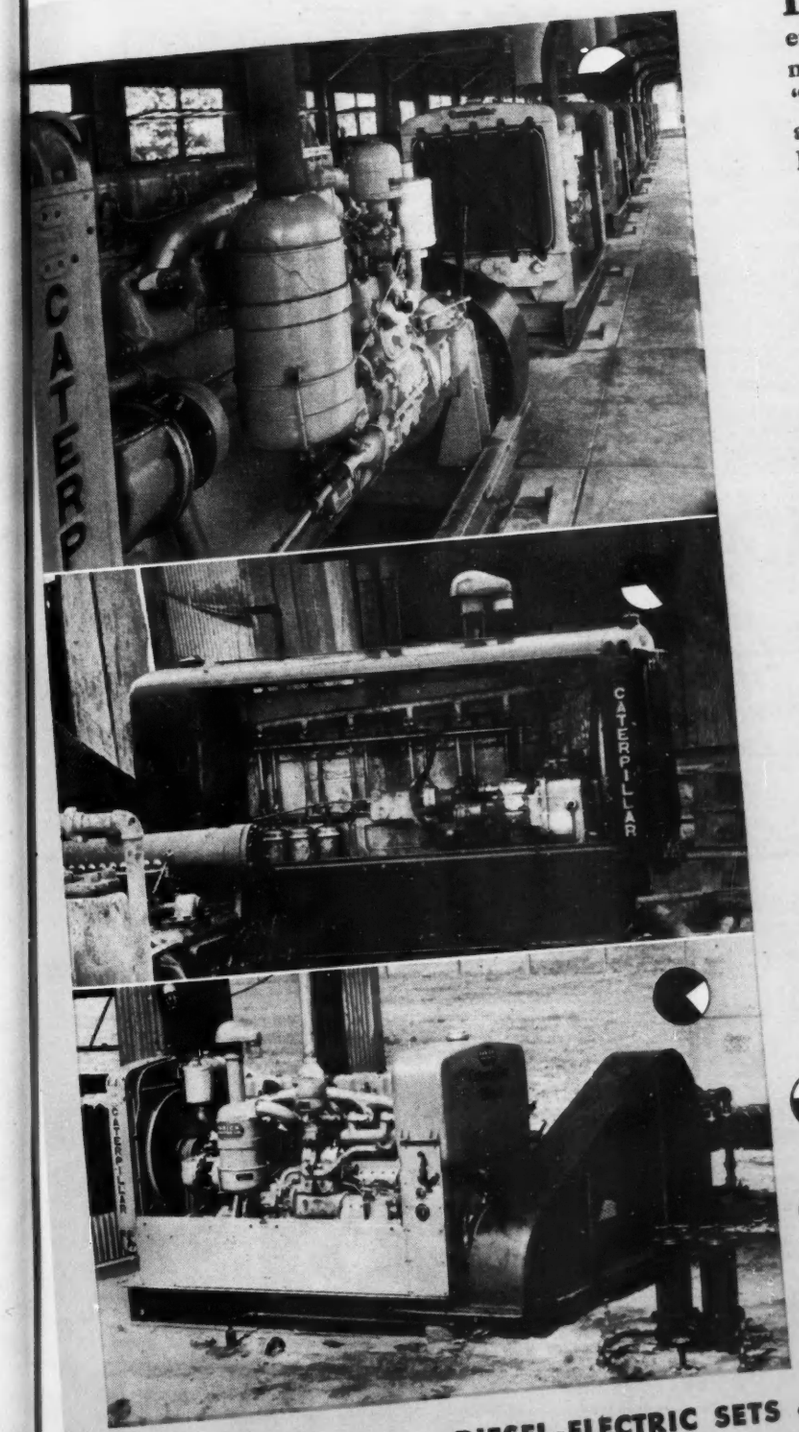

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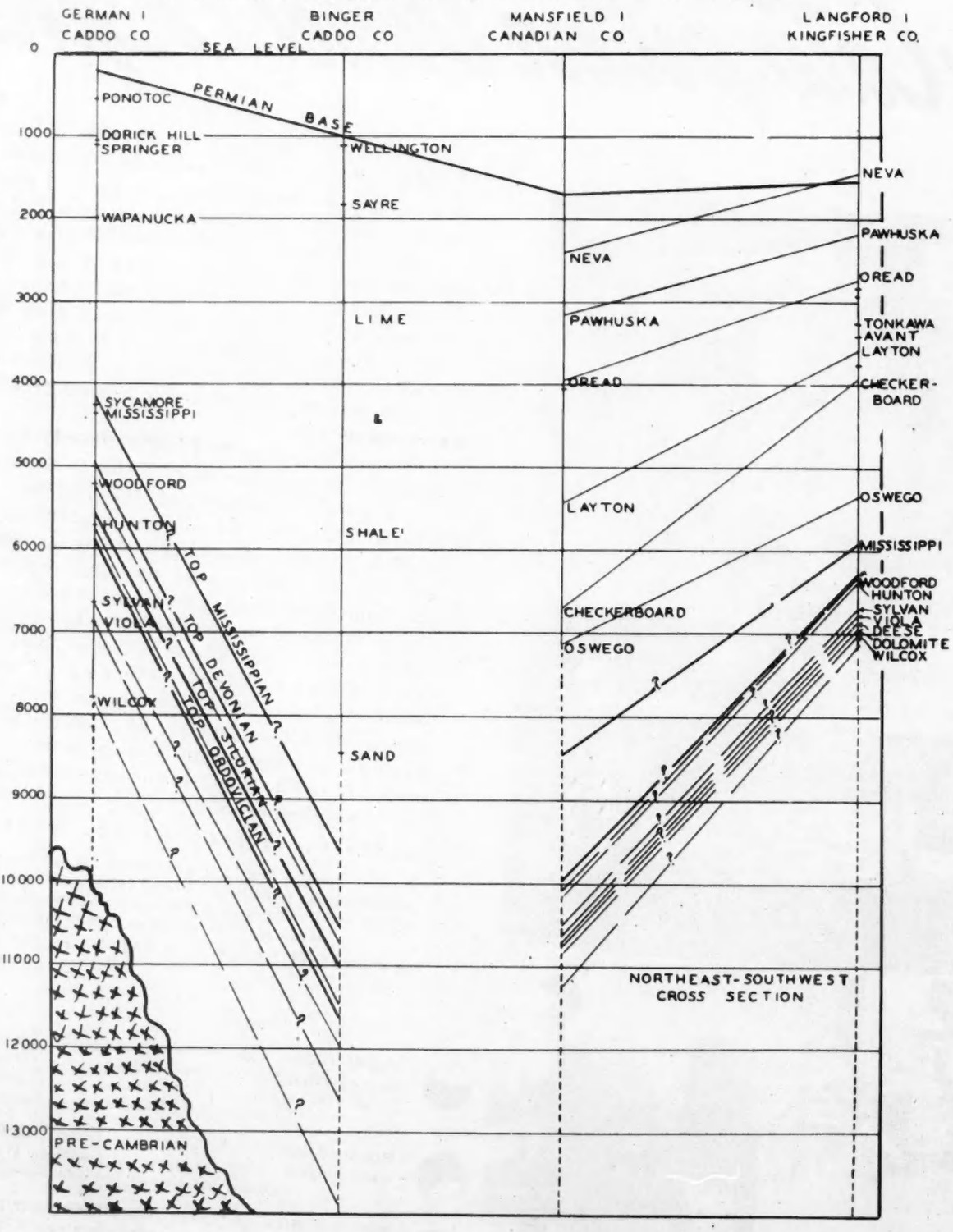
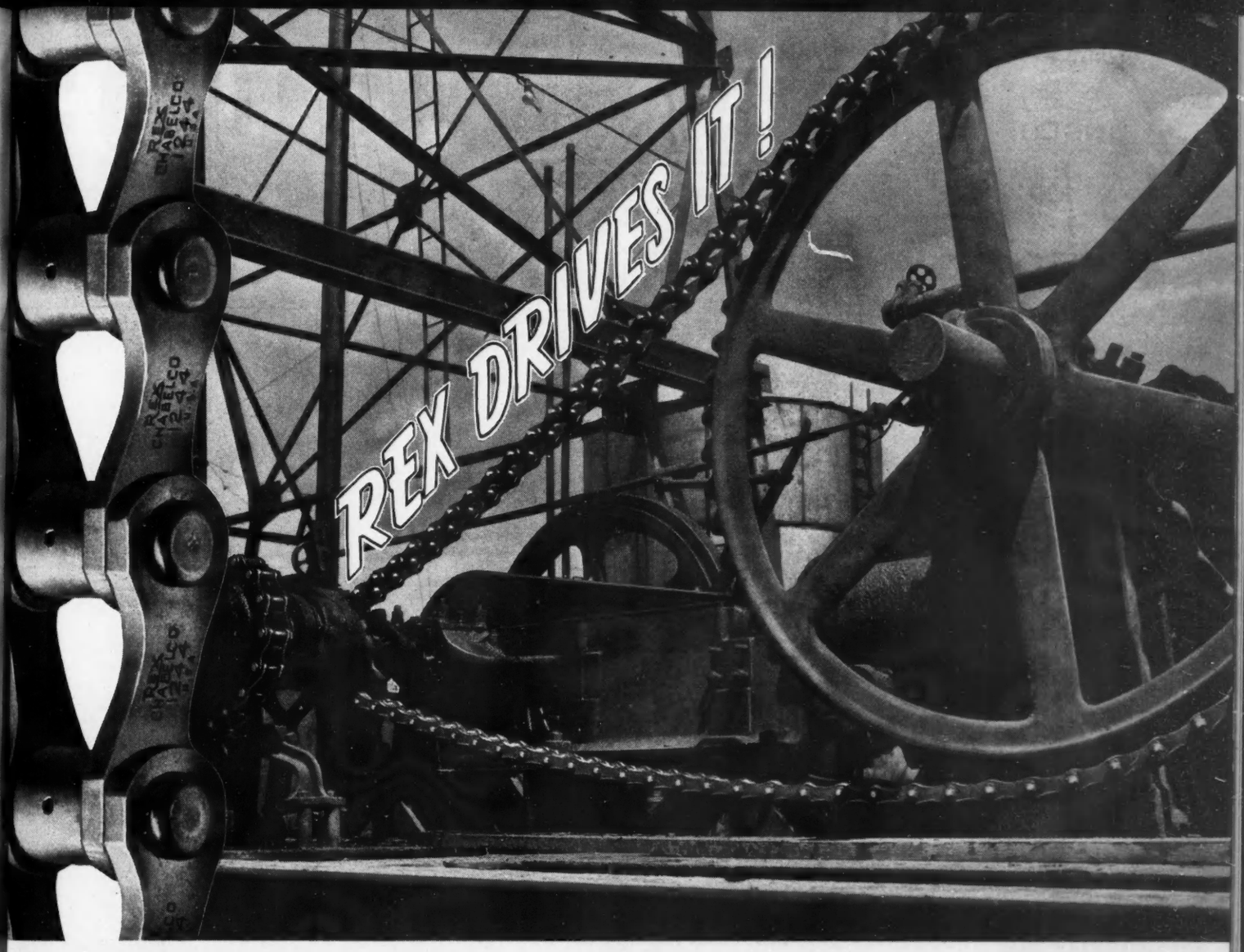
has been discovered in either area. At least 8000 feet of sediments must be penetrated before reaching horizons productive in other counties. A wildcat in this area, Magnolia Petroleum Company's Fiekes 1, C SW SW 31-18n-14w, 12 miles southeast of Taloga, is checking on par with a Canadian County dry hole. Neva was topped at 4230 feet, Foraker at 4430 and Pawhuska at 5010 feet, with well elevation at 1905 feet.

It can be said that these deep wildcats more or less proved the expected in that thick bodies of Pennsylvanian formations underlie the basin area and that definite structures can be located. As evidence of major company interest in the basin area, six seismograph

Northeast-Southwest cross section of Anadarko and Ardmore basins in Western Oklahoma, showing approximate depths of formations at four deep tests.





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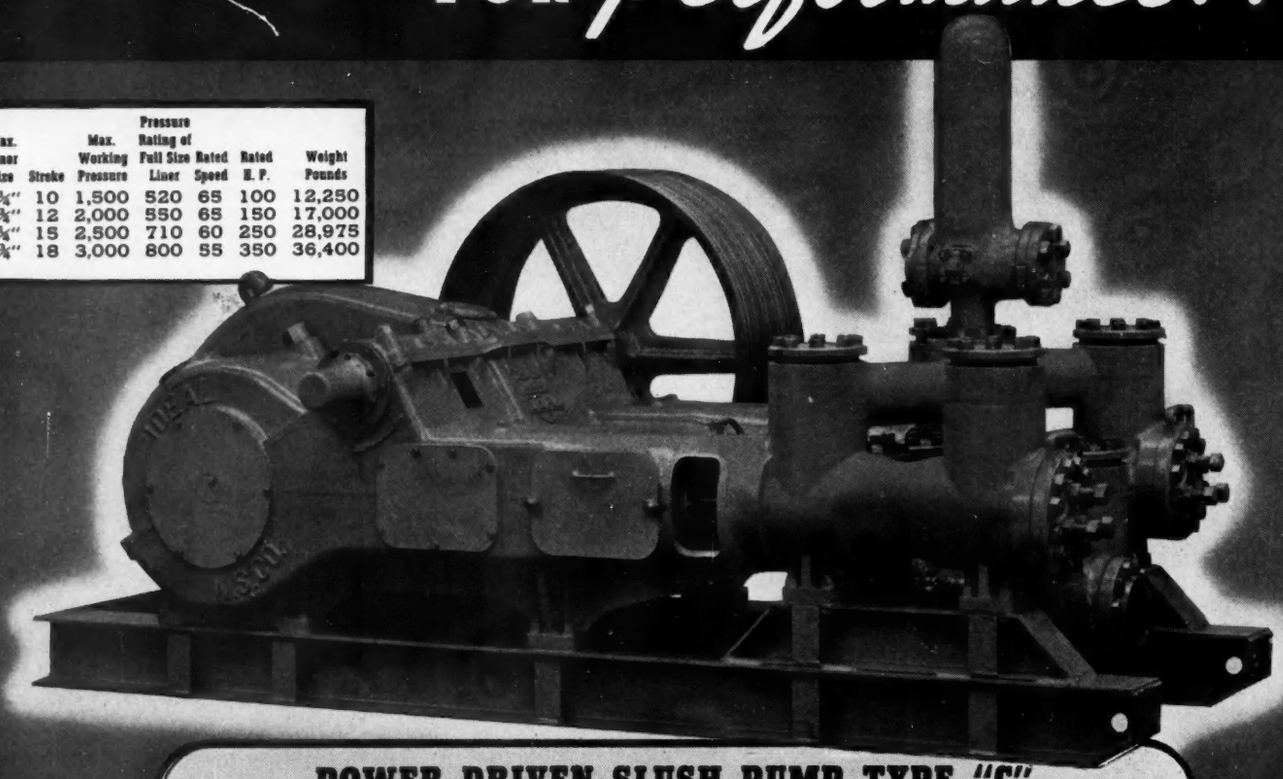
C-350	7¾"	18	3,000	800	55	350	36,400



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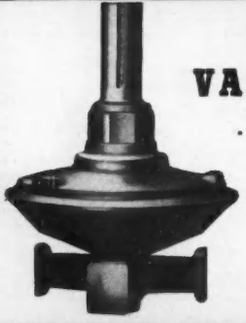
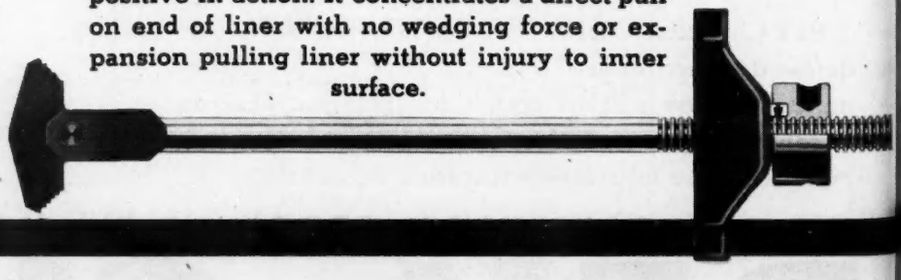


IDEAL TYPE F-I VALVES AND SEATS

. . . assure maximum pump efficiency and eliminate danger of washouts at valve seat by precision ground tapers on both seat and pump.

IDEAL LINER PULLERS

. . . simple in design, easy to center, quick and positive in action. It concentrates a direct pull on end of liner with no wedging force or expansion pulling liner without injury to inner surface.



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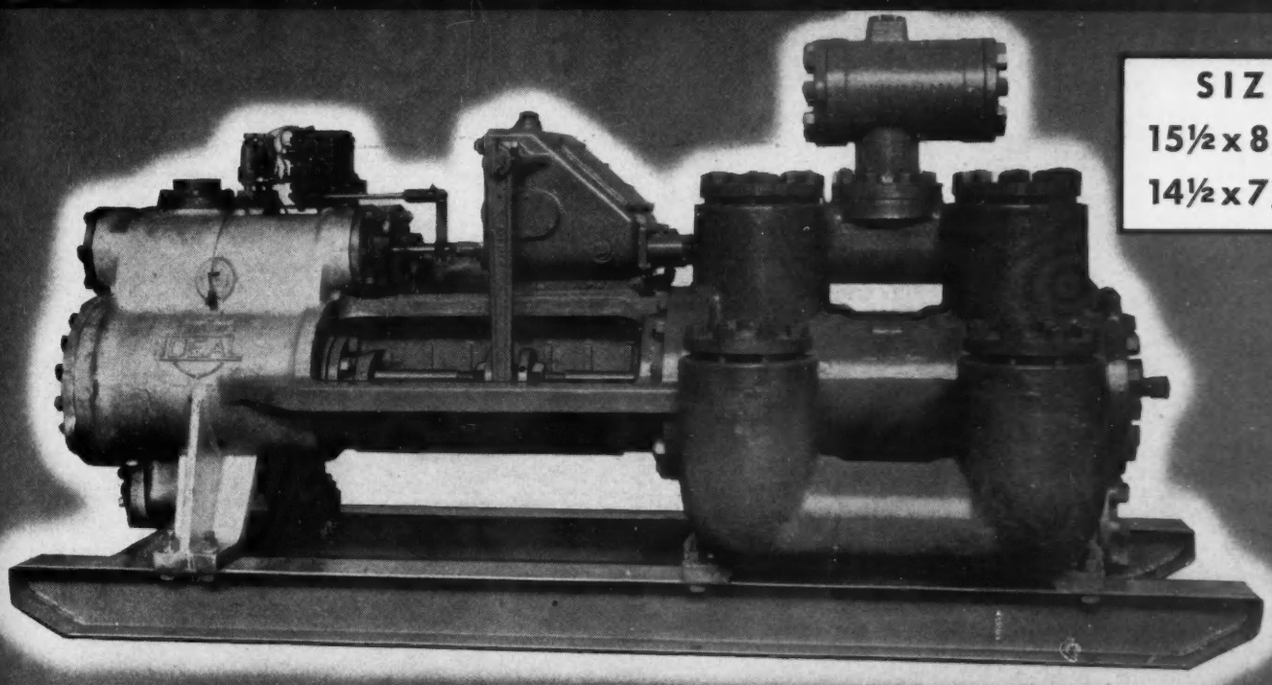
. . . Efficiency AND Economy



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The extensive use of Ideal Steam Driven Slush Pumps in the deepest drilling areas, where low footage cost is most important, is indicative of their superior performance and reliability.

AIN PERFORMANCE STANDARDS BY USING ONLY *Genuine* IDEAL PUMP PARTS

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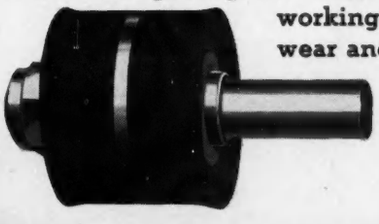

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. . . Have an extreme hardness combined with remarkable resistance to wear and low coefficient of friction.

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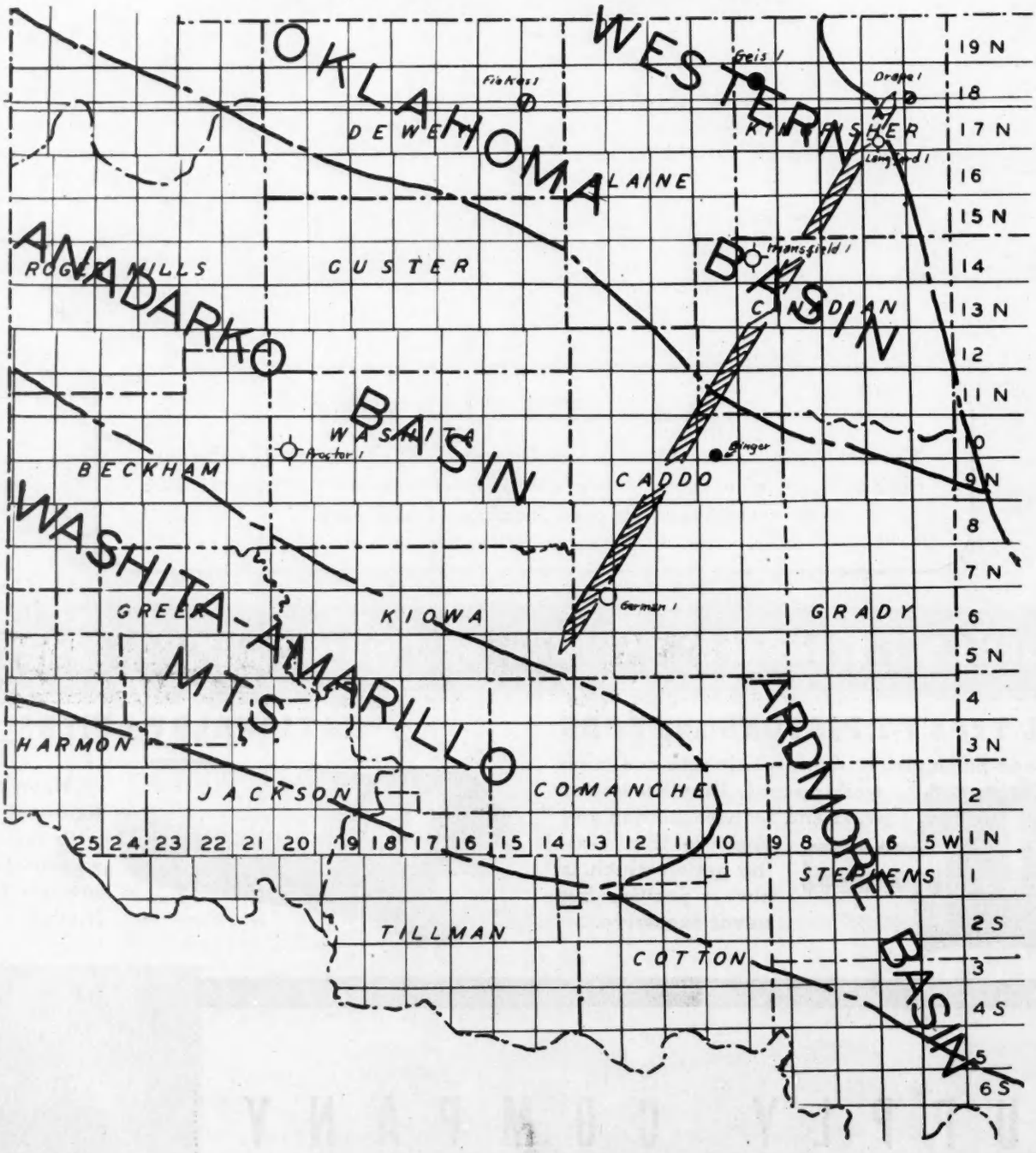
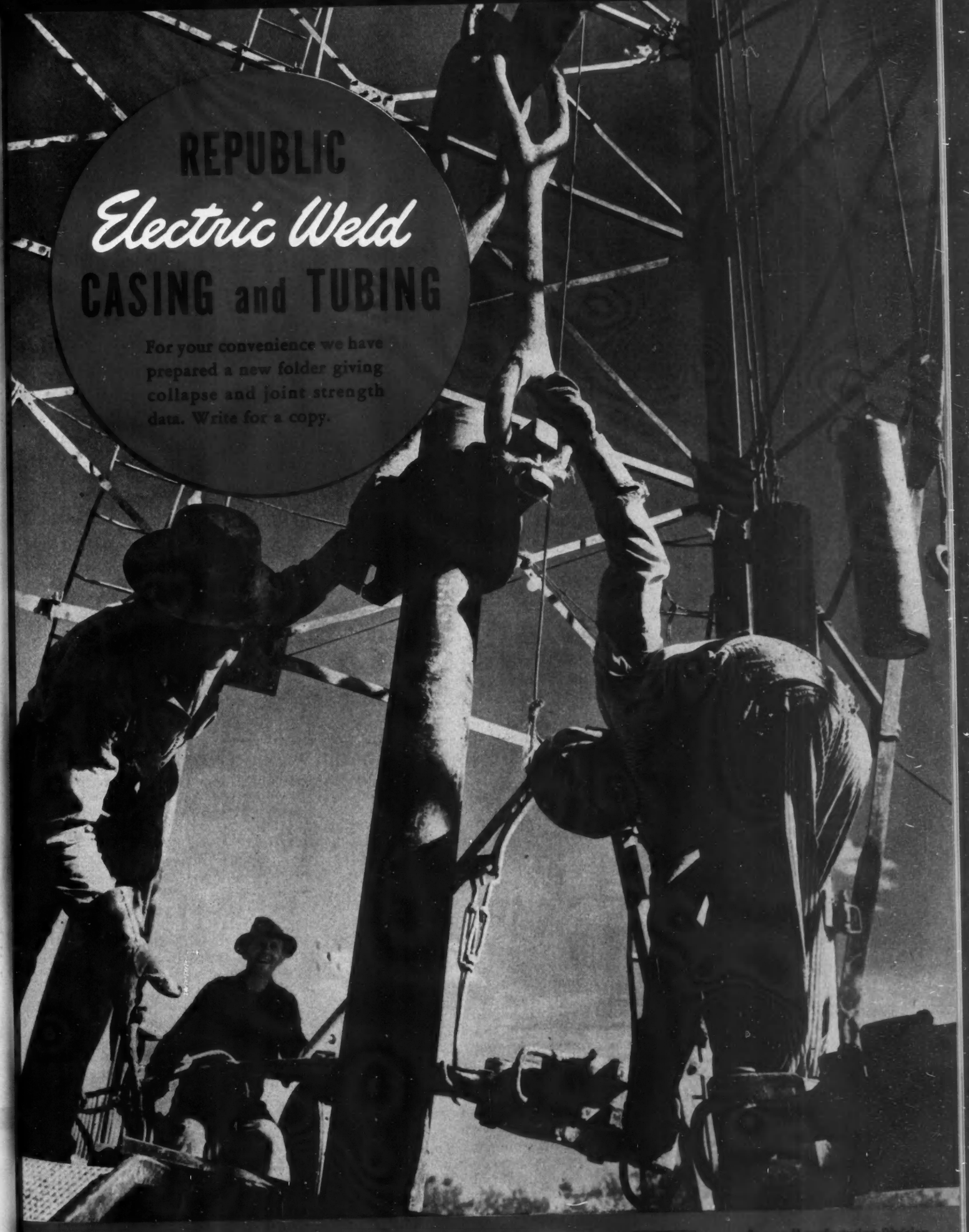
crews are shooting in northwest and southwest Oklahoma.

With increasing depths there is a necessity for accuracy in locating and determining the size of a structure. A large structure with sufficient closure in a submerged area is worth drilling attention. An Ordovician test would call for such consideration. Seismograph work has been going along for deep structures in Western Oklahoma since 1930 while core drilling supplied sub-surface information prior to that date. Structures have been mapped on top the Mississippian section while Pennsylvanian reflections are easily obtainable. Kingfisher County's recent test was mapped from a surface fold and seismograph surveys which disclosed a small structure with a minimum of closure. Large folds in the vicinity of Cement pool, Caddo County, give good reflections from which the Pennsylvanian strata can be mapped. Six miles northeast of Kingfisher, Ace Gutowsky drilled a dry hole at Langford 1, NEc SE 34-17n-6w, going through the second Wilcox sand to 8330 feet. On the same anticlinal structure, 6 miles northeast of the above test, Phillips Petroleum Company will make a 7500-foot test at Drape 1, C NW SE 30-18n-5w. Location is the center of a 10,000-acre block.

Geological Divisions of Western Oklahoma

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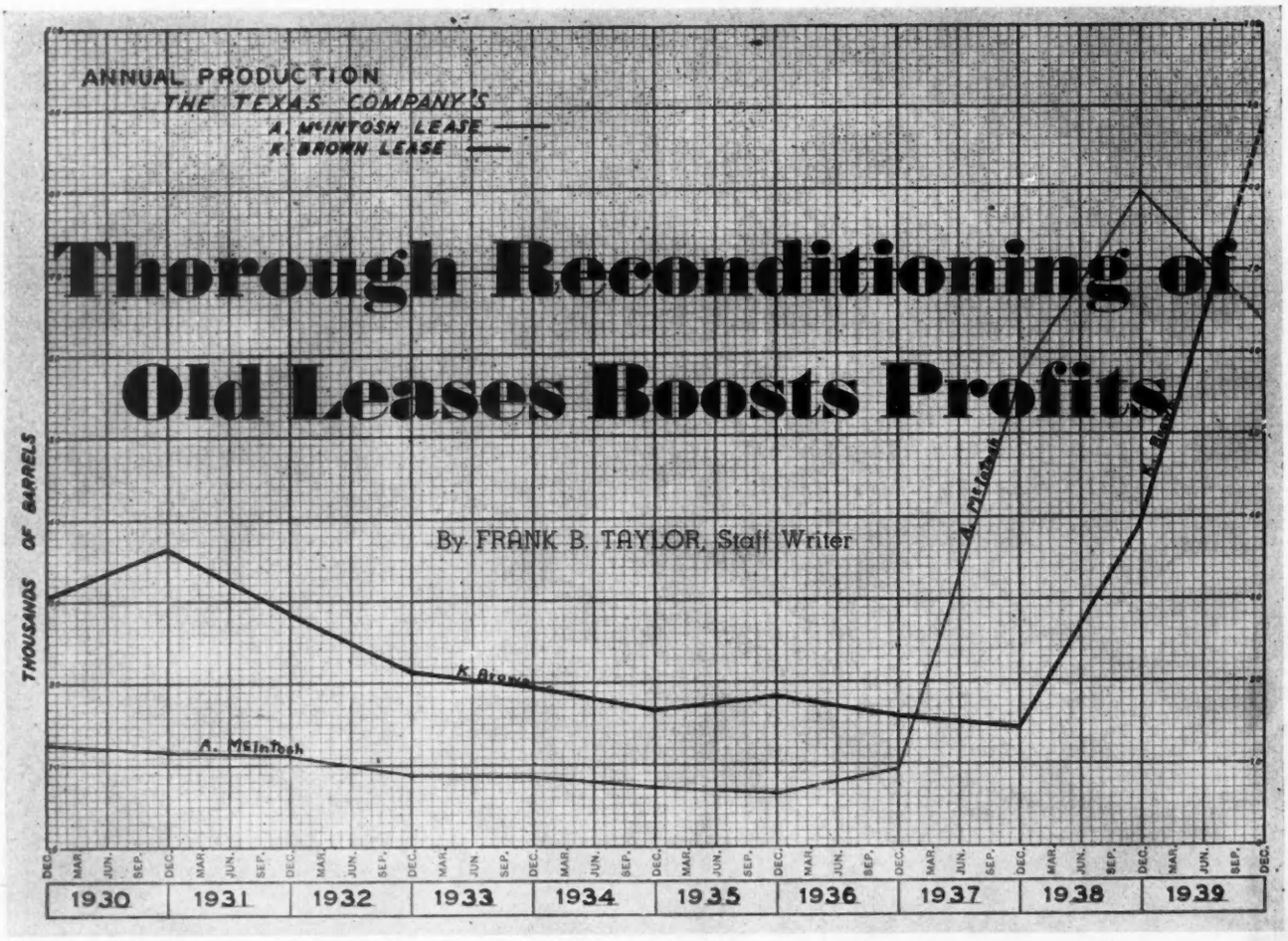


Thorough Reconditioning of Old Leases Boosts Profits

By FRANK B. TAYLOR, Staff Writer

A QUESTION that periodically confronts the production engineer or field superintendent concerns reconditioning of wells. Should they be worked over or not, and if so, to what extent? There is no rigid law to apply. So many variable factors are involved that the answer is one of careful analysis rather than one of formula. Assuming it advisable to work over a lease or a single well, there is only one answer to extent of the work; it must be thorough. Only by a complete job can the expense of the operation be justified.

A decision must be based on what increase might be expected in daily production in relation to cost of the work. The adaptability of the property and individual wells to clean-out methods, reservoir conditions, degree of pressure exhaustion and downtime are all to be considered. An important secondary factor is in judging the effectiveness of the work, in determining the ability of the wells to pay the cost of reconditioning plus a reasonable return on the invested capital before it would again be necessary to repeat the work.

In judging the applicability of clean-out methods, reserve remaining in the reservoir must be sufficient to excite an increase in flow into the hole. If the reservoir reserve is slight, it may be that flow volume is normal, despite partial blocking action of scale, etc., in which case a clean-out would be wasted effort. This is true in cases where the pay section is thin. Remaining pressure within the formation has much to do with flow into the hole, and if a back pressure is produced at the face of the pay, relief of this condition will proportionally increase the effective area through which the pressure may influence migration. The older the field or well, and the less pressure remaining, the less pressure differential is necessary to seriously retard flow. Where only a few pounds pressure remain, ounces of back-pressure can materially decrease production.

Downtime and length of effectiveness of reconditioning work are too highly variable for exact analysis. It is usually a blind guess to say how long a job is necessary to clean a given well. Seldom is it known what might be found until after the tools go into the hole. Where one 1400-foot well may clean up in 3 days, the next location may require 2 weeks at proportionally increased expense. The best manner of approaching the question is to take an average based upon experience and adjusted to conditions of the lease or well.

The length of effectiveness varies not only the thoroughness of the job, but also with the volume of remaining crude in the reservoir. In addition, loose material in the pay strata may quickly plug the formation about the hole and render the clean-out ineffective. A high chemical content of reservoir water, or high paraffin content of the crude, may each result in swift deposition of scale on the face of the pay, again limiting the period of effectiveness.

Increasing Earning Capacity

Looking at the question broadly, it is generally desirable to clean up any well or lease if daily production and operating efficiency can be bettered. Any measure that

can be applied to mitigate a normal depletion trend increases the earning capacity of the lease or well. But cost of the operation must not over-balance increased return.

Due consideration having been given these factors, The Texas Company completely reconditioned two leases in Drumright pool, Creek County, Oklahoma. A study of before-and-after production trends shows the work to have been highly successful. A thorough job pulled the leases from their inferior rating.

The company's McIntosh lease, Section 3-17n-7e, with 8 producers, was making 9 barrels per day in October, 1936, prior to reconditioning. Following clean-out and discounting production from a newly-drilled well, the lease produced at a rate of 161 barrels per day during 1937 and 1938. The second lease, K. Brown, Section 9-17n-7e, produced as little as 26 barrels per day before reconditioning 11 wells began in 1938. Following clean-out operations production has averaged 170 barrels per day from the same wells.

Interpreting the work on a basis of per-barrel return above normal as justification for the clean-out, it is immediately apparent that both leases are now highly efficient production units.

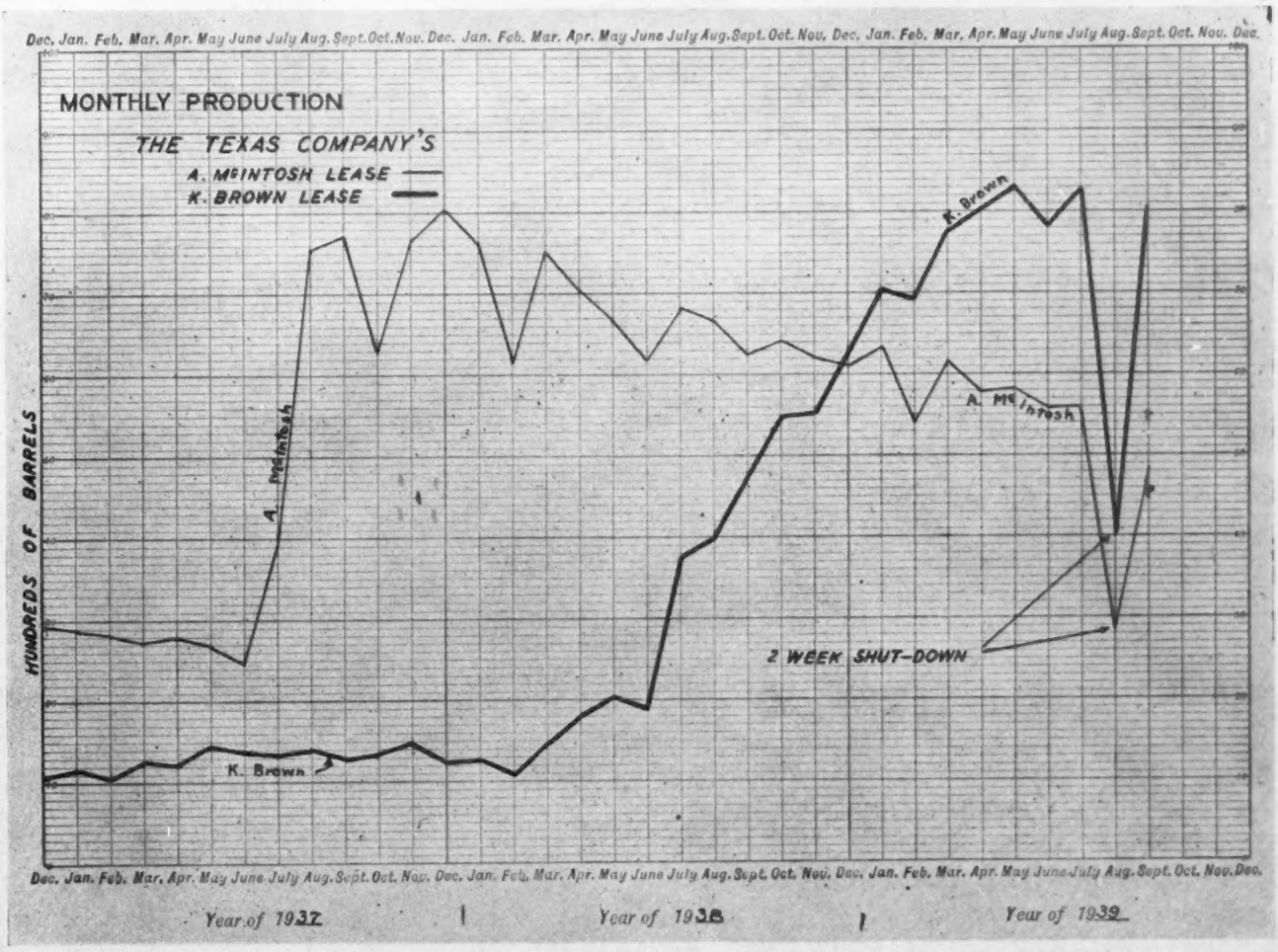
273,000 More Barrels in 5 Years

In three years the McIntosh property has made about 176,000 barrels as a result of reconditioning, this volume in excess of the normal depletion rate. The Brown lease by the same agency has produced 97,000 barrels above the volume to have been expected had no effort been made to rejuvenate the property. This substantial increase of 273,000 barrels for the two leases represents less than 5 years of operation. The effectiveness of the work will continue to influence production through 6 years for each lease, or a total of 12 years. During this period the leases should produce approximately 363,000 barrels before returning to the production rate established prior to reconditioning, the 6-year calculation being based upon normal diminishing recovery and taking into consideration the depleted state of the reservoir. Study of the accompanying graphs of production tend to indicate an even greater return.

Both leases produce from Bartlesville sand at a mean subsea depth of 1700 feet at an elevation of 910 feet, making the average total depth around 2610 feet. Sand thickness averages 100 feet. Both leases were drilled originally in 1914, making the production 25 years old. Initial gauges varied greatly from 650 barrels per day to 5000 barrels. Crude is of 41 gravity, paraffin base. Initial pressures were normal with this depth.

Considerable gas was present above the oil in early days of development but this has been dissipated. There was edge water but none in the formation on the higher parts of the structure. Wells were shot with 20 to 30 quarts in the pay, sometimes as many as five

This chart and the one on opposite page show how production was affected by the clean-out and reconditioning work.



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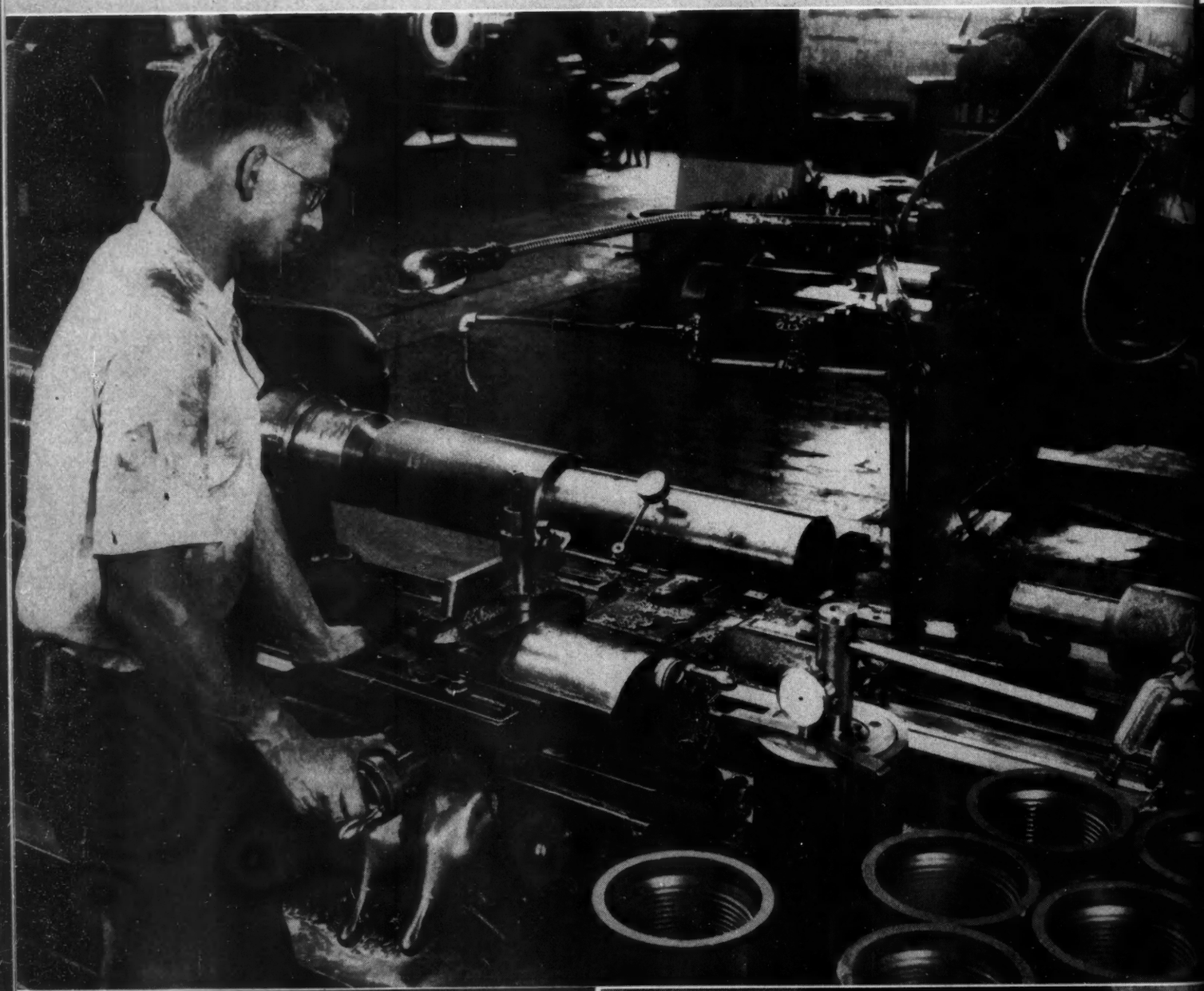

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GR Reed Tool Joints are threaded on both the pin and box cuts on a common axis so that there can be no axial misalignment. With faster rotary speeds and today's deeper drilling, this fact becomes more important.

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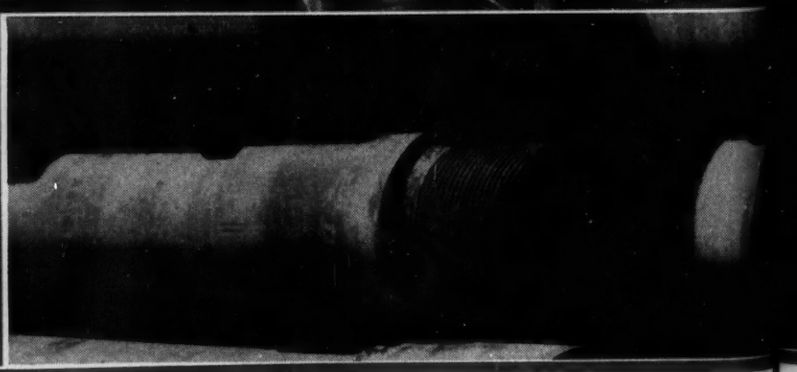

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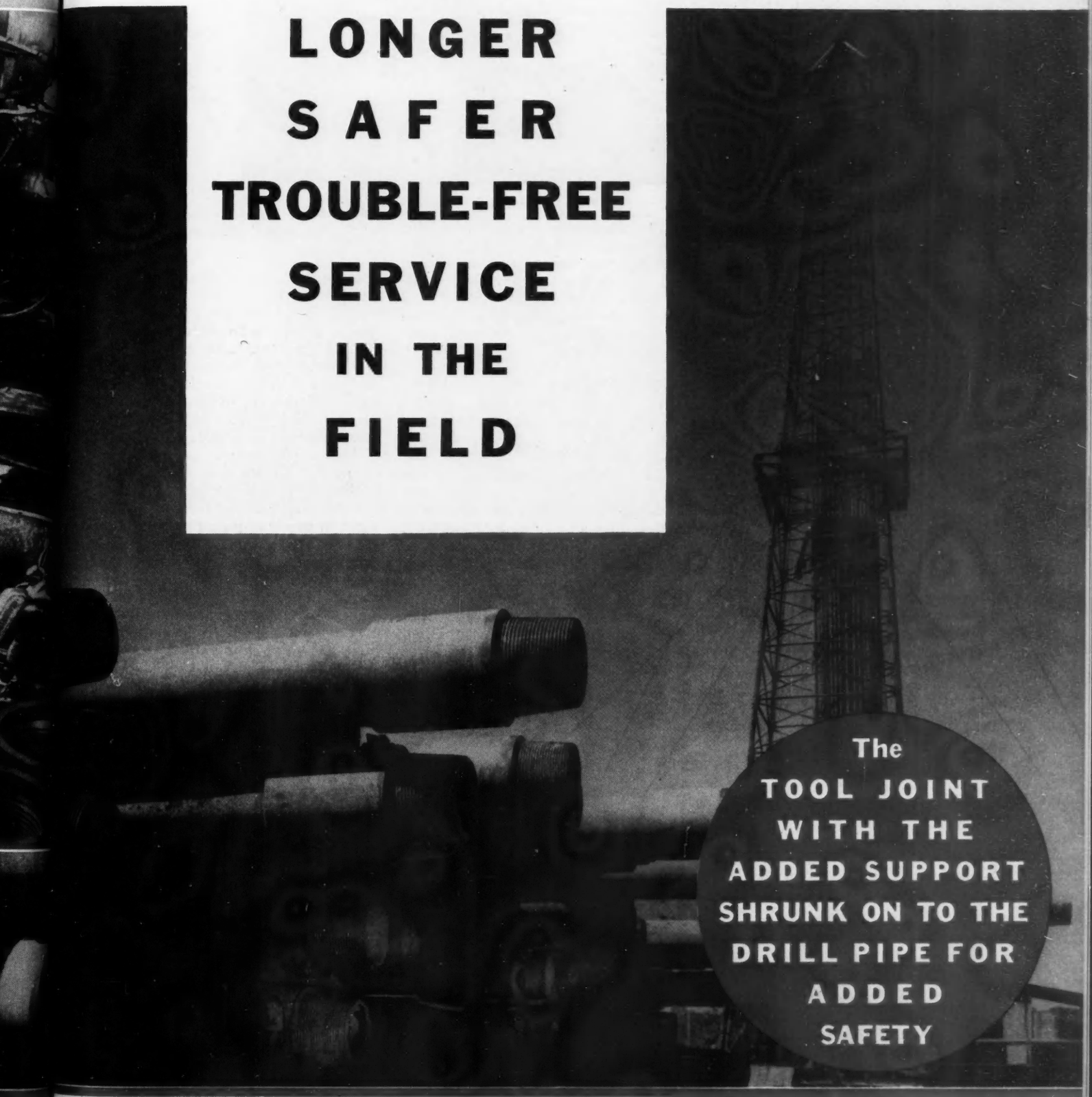


The
TOOL JOINT
WITH THE
ADDED SUPPORT
SHRUNK ON TO THE
DRILL PIPE FOR
ADDED
SAFETY

R BIT COMPANY

HOUSTON
TEXAS

Interior of McIntosh lease power, clean and well lighted.

times. Completion practice generally called for a string of 5½-inch, 17-pound casing, with open hole through the formation. However, on the McIntosh, a number of slotted sections of casing were found penetrating the formation, and these were removed in the process of cleaning out.

As production continued through the years, the fluid level fell in the sand and it was necessary to follow it down with pumping equipment. Production was routine until 1936 when the clean-up was begun. Some wells had been barely productive, none were producing at estimated capacity, and one had been off production for 10 years.

Receiver and four 250 lows as lease storage on The Texas Company's Brown lease. In addition to fencing, ground about tanks has been leveled and rock retaining wall constructed.

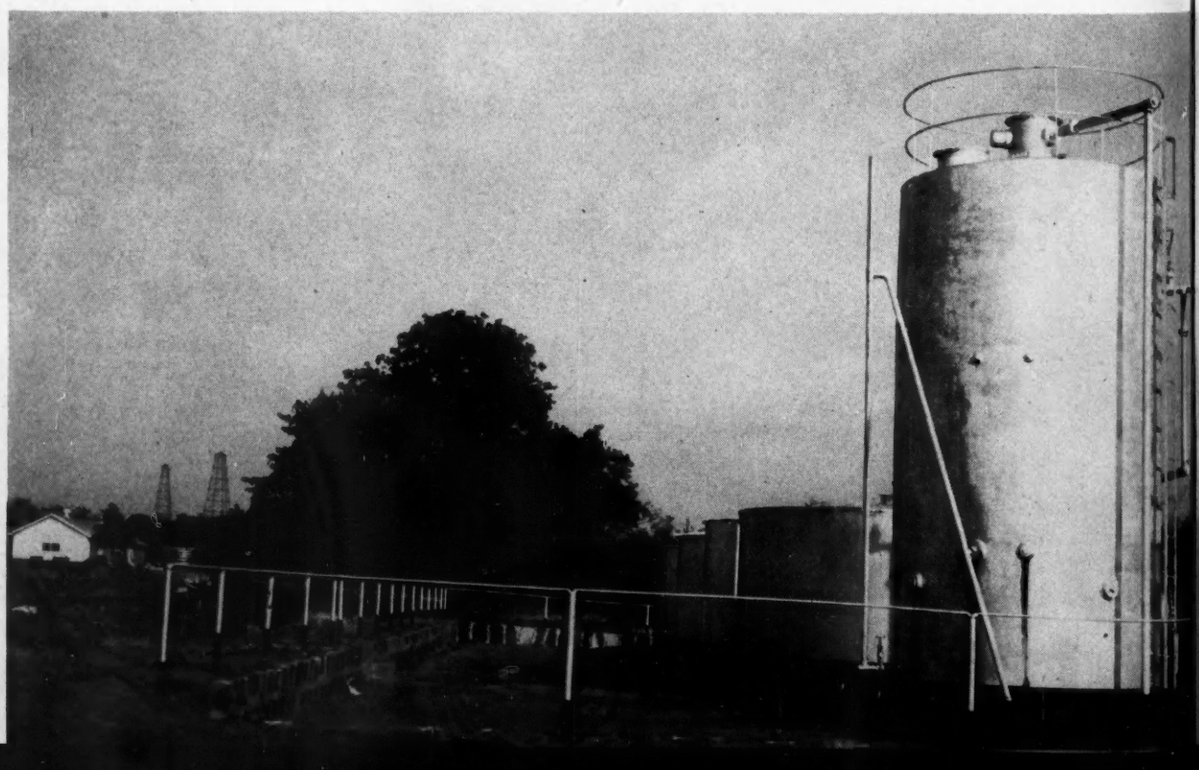
The clean-out crew, under the supervision of A. L. Kraft, included only experienced men and they did a complete job on each well. Portable clean-out equipment was used with a unit designed for the purpose. Fishing tools and sand pump headed the list of tools.

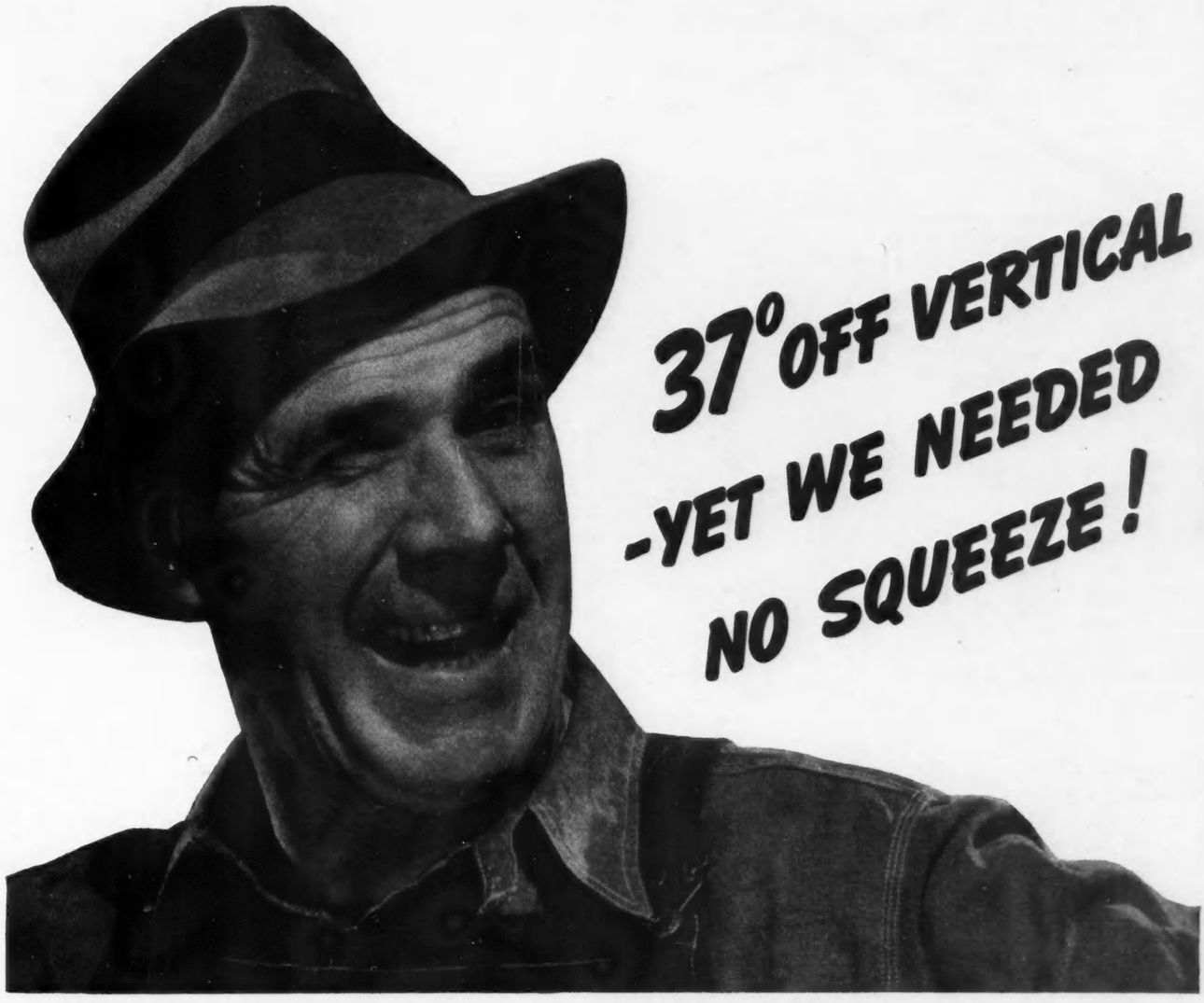
Everything Removed from Hole

The first thing the operators did when going into a hole was to put on a fishing piece. A set of jars was used both above and below the "sinker" to give greater control on the tools in case they became stuck. Old well equipment presented the major problem. Tubing, anchors, rods, etc., had to be picked up. Sometimes all metal could not be brought out and had to be left in the shot hole.

After all possible metal has been removed, the wells were squibbed with from 10 to 40 quarts. Any remaining metal should consequently have been fixed into the walls of the hole as a result of the shot, and should cause no more trouble. However, in anticipation that this did not occur in each case, the junk was sidetracked with a 4½-inch insert liner perforated through the lower 50 feet. The light shots also opened the pay and disrupted any paraffin-chemical scale that might have been retarding flow into the hole.

Following the shot, the crew went in to clean out. For this purpose, a sand pump was used. Although of a standard make, the pump was lengthened to 46 feet above the normal length of 26 feet. This allowed greater freedom within the shot-hole with less danger of it becoming hung up. With the

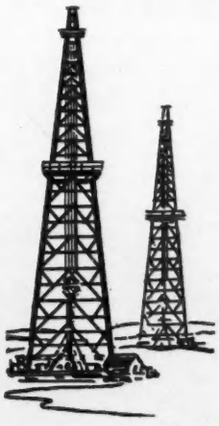




37° OFF VERTICAL -YET WE NEEDED NO SQUEEZE!

12 Good Reasons for Using Unaflo...

The Oil-Well Cement with a Retarded Set



1. Gives you more time to get it down.
2. Mixes and places easily with 35% water, thus eliminating need for excess water — a big menace to good cementing.
3. Follows irregularities of well bore and casing.
4. Easier to regulate viscosity at tub.
5. Hardens thoroughly with high density after placing.
6. Not stiffened by mud contamination.
7. Not affected by salt water contamination.
8. Sets satisfactorily in sulphate water.
9. Meets the requirements for sulphate resistance.
10. Makes squeeze and plug-back jobs easier, surer, more successful.
11. Permits operator to control cement rather than being controlled by it.
12. Has been proved by oil industry by consistently "coming through in the clinches" ever since its introduction.

"WE were cementing an 8,700-ft. well on the Gulf Coast with Unaflo Oil Well Cement. Down-the-well temperature was 206° F. The lower part of the bore was 37° off vertical. Our boss sure was scowling over that. He said it was forcing us to follow up this job with a squeeze.

"Well, sir, you should have seen his jaw drop when that cementing job was done . . . No squeeze was needed at all! That Unaflo cement made a fluid-tight seal—all in one operation!"

"Here's how we figured it. A 10-lb.-per-gallon mud in this well caused a natural bottom-hole head of 4,000-lb. per sq. in. And this pressure on the fluid slurry turned in a natural squeeze job for us!"

Play safe with well investments. And save money! Use Unaflo, the easy-flowing, hard-setting cement with the retarded set *that provides a natural squeeze.* Write for "Oil Well Cementing Guide," a new book on using Unaflo under Mid-Continent conditions. If you are in the Mid-Continent field, write today on your business letterhead. Address nearest office of Universal Atlas Cement Co. (United States Steel Corporation Subsidiary), Amicable Building, Waco; Tulsa; Oklahoma City; Kansas City.

OW-H-6

Universal Atlas CEMENTS

The Texas Company's McIntosh 6. Head-on view showing native rock wall around foundation.

extension, both leases were completely worked over without once catching the bailer.

Sand was pumped from each well, in some cases as much as 3 yards. Wells were pumped as clean as possible, not just until fairly clean. When no more sand could be recovered it was found that a few hours time might show some more. After this was removed and no more showed up, the wells were assumed to be clean.

During clean-out operations it was found expedient to run tools into the hole before dumping in any water. When water was put in first and then the tools made ready, it was found that the formation had taken most of the water, and that it did not come back readily. Therefore, enough water was put in the wells for the operation, no more.

Equipment Modernized

Equipment was entirely revamped. Casing in the holes was found in generally good condition, and none had to be replaced. No formations tending to corrode the exterior of the pipe were passed, and examination showed mill coat remaining on some joints that were checked. Pumping equipment was entirely modernized. Upset tubing was used in some wells, at least in the upper section. Liner pumps were installed. Reconditioning was completed with the discarding of all pieces of equipment that might result in down time or a fishing job. This assured both an increased operating efficiency and a decreased operating cost per well.

To assure maximum production and operating economy, complete and accurate records are being kept of production, lease equipment, well condition and general lease repair. These will be invaluable in making future decisions on operating methods and proposed work. Close attention is being given individual wells, as to their action. Paraffin is being kept off rods and tubing by periodic treatment with solvent.

Although the record increase of production on these two leases is somewhat exceptional, the record is in entire agreement with the thoroughness of the work. No effort was spared to bring the leases to a high point of efficiency. Results prove the investment to be paying big dividends at this time, and the graphs of production point to continued high production rates far above what would have been possible without reconditioning of the properties.

Central power on Brown lease, pulling nine wells.

1. MUD CONDITIONING

High Pressure Mud Stream Aids In Lowering Viscosity

ONE of the problems of ever-growing importance, now that the current trend of drilling is toward still deeper and straighter holes, is that of mud viscosity control.

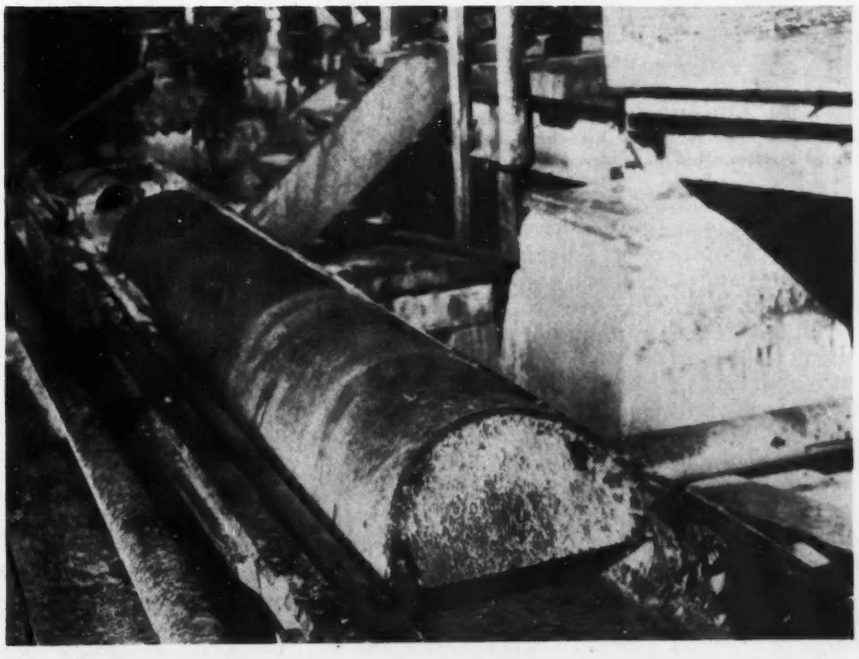
To the average operator, that term is usually synonymous with the necessity of employing expert technicians who are trained in that field, or the use of costly reagents or mud-control chemicals. In extreme conditions of mud problems it is wise and economical to employ these new scientific services, but in a great number of cases a simple yet effective device for partially breaking down the viscosity will save considerably on drilling costs.

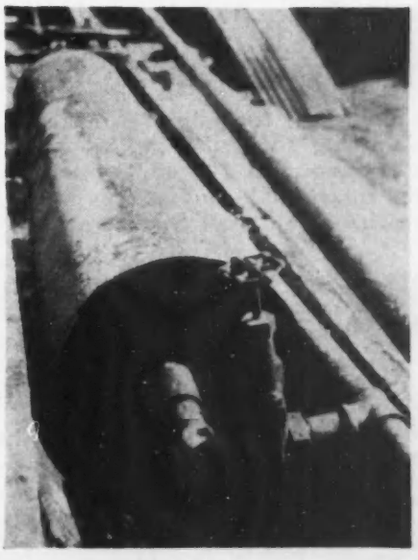
A large company in California that is drilling in a field whose producing depths range from 6000 to 9000 feet, did considerable experimenting, and finally adopted the following easily constructed combination, which does an admirable job.

It consists essentially of a 10- to 20-foot length of large diameter casing that is laid in the mud ditch a few feet down stream from the outlet pipe that comes from the well. A fine stream of high pressure mud from a small auxiliary slush pump is forced through a small nozzle at the up-stream end of the pipe and is directed against an irregular group of six or eight small steel baffle plates welded to the upper part of the lower end of the pipe. The resulting sprays of mud directed into the main mud-stream serve to agitate, and churn it up, and thus break down the mud viscosity and aid in the escape of free gas held in suspension. For extremely critical conditions the nozzle can be swung downward to point directly into the mud and will churn it up violently.

The size of the nozzle on this particular job was a short piece of ⅜-inch pipe. Considerable experimenting was done on different sizes of nozzles and it was found that this size was best suited for the work.

A break-down of three to four points in viscosity is being averaged with this arrangement. Their





A fine stream of mud under high pressure is injected into the mud stream through a nozzle to agitate and break down viscosity. A section of large-diameter pipe provides baffle plates to further churn up the mud stream below the outlet pipe.

viscosity coming out of the hole ranged from 42 to 45 and after passing through this device was found to be from 35 to 40.

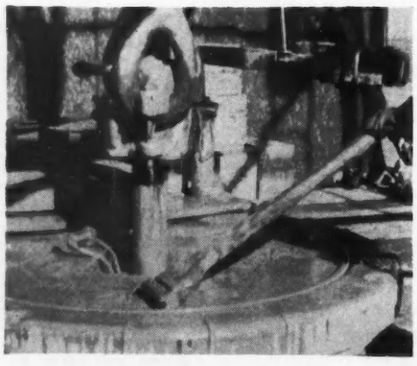
A particular advantage of this device lies in the fact that it can be placed so near to the point where the mud comes out of the hole. In this way the mud can be treated while it is still moving fairly fast, and tends to retard the formation of gels which in turn prevent the escape of occluded gas and small cuttings that would then be held in suspension.

2. MUD SCRAPER

Oil Saver Makes Convenient Tool

SCRAPING mud from the derrick floor and rotary table is always a dirty job, and the usual steel scraper seldom fits the out-of-the-way corners. Splinters are picked up by the sharp edge, and protruding nail heads prevent a good job being done.

A driller, who is both a swivel neck and a rope choker, working for Helmerich & Payne, utilized an oil saver used on cable tool drilling gates. It was nailed to a convenient length of two-by-four, square on one end and shaped with a handle on the other. The pliable edges of the tool slip over obstructions, but scoop the mud away to a clean surface. It may be used on the rotary table, and sees as much service as any tool on the rig.

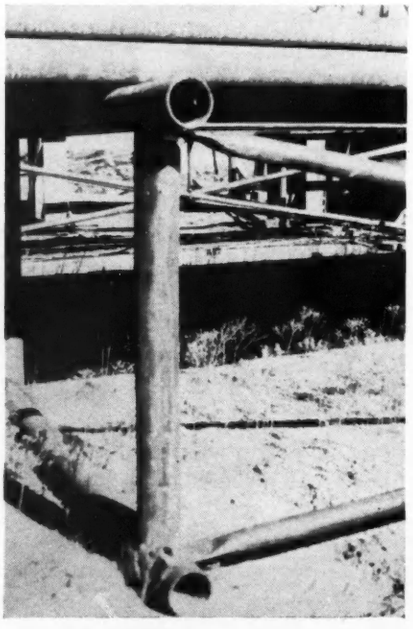


This easily-made mud scraper can be used on the rotary table and in out-of-the-way corners on the derrick floor.

3. PIPE HANDLING

Drill Pipe Makes Sturdy Rack

DISCARDED drill pipe is utilized in construction of an all-steel pipe rack at the rig of R-G Drilling Company, in the Hull-Silk field of Archer County, Texas. Replacing the common wood rack, subject to break down under load and damage by splitting of sills, the all-steel rack is permanent in construction, is easily knocked down and reassembled at a new location, and may be repeatedly used.



Discarded drill pipe provides a sturdy pipe rack that is easily knocked down and reassembled at a new location.

The rack is built in two units, each unit consisting of two sections. Tool joints are removed from drill pipe, and the upset ends cut off with a torch to provide rails of suitable length. Two rails comprising each section are connected with five risers. Length of the risers is determined by desired height of the rack, a height convenient for unloading pipe from a truck. Four holes are burned near the outer ends of the rails to accommodate ¾-inch steel machine bolts.

When assembling the rack, short pieces of planking are laid on the ground as piers for the bottom rail of the rack section to prevent sinking into the ground in wet weather. Four braces are required for each unit. They are made of heavy tubing, each end flattened and punched to take ¾-inch machine bolts. One end of each brace is attached to the bottom rail of the section, bolted in place, and the other end bolted to the top rail of the opposite section. Braces are crossed in the process of attaching. With two braces at each end of each unit, the rack is sturdy and not easily shaken. Each section is identical with the others, simplifying assembly.

Cost of the rack depends upon material available, and the expenditure for welding and cutting.

4. LINE CARE

Control Eliminates Crossed Lines

OCCASIONALLY a production or rotary crew will be troubled with crossed lines between the traveling and crown blocks. Often the work will progress if the lines just have a tendency to cross, so that at a critical time the lines will cross delaying operations. Such a condition can be and must be remedied.

After the block is laid on the derrick floor, the dead line is usually twisted so many times in either direction. The twist is then run into the line with the hope that the trouble will be removed. This trial and error method is ridiculous and may be eliminated by a little thought. Using a strand of soft rope suspending a weight, the situation may be duplicated and the solution found. Naturally the number of turns depends on the degree of trouble and number of lines strung.

When looking up the derrick if the lines are crossed to the left (crossed further by turning block to the left), twist free end of wire line to the left. Crossed to the left, twist left; crossed to the right, twist right. In applying the rule one always must be looking toward the crown block. Circular direction may be likened to the turning of an automobile's steering wheel.

Number of Rigs in Field February 1 Highest in Past Year

STATE OR DISTRICT	TOTAL RIGS IN OPERATION (Drilling, Rigs Up, Shut-Down)				DETAILS OF FEBRUARY 1, 1940 DRILLING ACTIVITY					
					Rigs in Operation			Prelim. Activity		
	Feb. 1 1940	Jan. 1 1940	Feb. 1 1939	Percent Change from Year Ago	Drilling	Rigs Up	Shut-down	Derricks	Locations	Total Operations
Alabama	3	2	4	— 25.0	...	1	2	...	1	4
Arizona	8	8	5	+ 60.0	3	...	5	...	...	8
Arkansas	32	32	39	— 17.9	21	1	10	5	2	39
California	308	314	327	— 6.4	203	69	36	31	41	380
Colorado	27	34	19	+ 42.2	2	...	25	...	2	29
Florida	3	3	5	— 40.0	1	...	2	...	...	3
Georgia	1	1	.....	.....	...	...	1	...	...	1
Illinois	447	318	326	+ 37.2	362	40	45	...	56	503
Indiana	76	65	38	+100.0	48	...	28	...	17	93
Iowa	2	2	.....	.....	2	...	...	...	...	2
Kansas	219	236	189	+ 15.9	162	33	24	15	10	244
Kentucky	59	67	76	— 22.4	13	6	40	...	1	60
Louisiana	210	205	184	.....	188	9	13	22	59	291
North Louisiana	70	70	75	.....	60	...	10	10	4	84
South Louisiana	140	135	109	.....	128	9	3	12	55	207
Michigan	200	243	169	— 18.3	153	22	25	9	10	201
Mississippi	36	36	6	+500.0	14	11	11	4	2	42
Missouri	10	22	.....	.....	1	1	8	3	7	20
Montana	33	40	42	— 21.4	8	4	21	...	...	33
Nebraska	14	2	.....	.....	...	...	14	...	...	14
New Mexico	159	150	119	+ 33.6	107	13	39	...	17	176
New York	62	62	37	+ 67.5	26	13	23	4	4	70
Ohio	105	121	118	— 11.0	51	6	48	6	7	118
Oklahoma	333	346	371	— 10.2	250	33	50	58	37	428
Oregon	1	1	.....	.....	1	...	...	...	...	1
Pennsylvania	162	165	148	+ 9.4	141	7	17	12	16	193
South Dakota	2	2	.....	.....	2	...	...	...	...	2
Tennessee	4	8	.....	.....	...	...	4	...	...	4
Texas	1,313	1,268	1,176	+ 11.6	1,002	112	199	60	452	2,277
East Texas Field	16	14	28	— 43.7	12	2	2	5	5	26
East Texas Border Counties	8	10	13	— 38.4	4	1	3	2	...	10
Rest of East Texas	44	43	30	+ 46.7	24	4	16	4	3	51
North Texas	235	194	163	+ 44.2	165	19	51	5	142	382
South Texas	305	309	324	— 79.0	242	23	40	19	69	393
Corpus Christi Area	161	166	165	— 2.4	140	9	12	8	33	202
Laredo Area	82	78	97	— 15.5	60	9	13	8	27	117
San Antonio Area	62	65	62	.....	42	5	15	3	9	74
Texas Gulf Coast	138	159	135	+ 2.2	126	11	1	17	80	238
Texas Panhandle	129	120	67	+ 77.6	89	22	18	1	19	149
West Texas	325	311	340	— 4.4	278	25	22	6	88	419
West Central Texas	113	108	76	+ 48.6	62	5	46	1	46	160
Utah	3	8	.....	.....	...	...	3	...	...	3
Washington	1	1	.....	.....	...	...	1	...	...	1
West Virginia	91	88	71	+ 28.2	55	19	17	7	11	109
Wyoming	63	74	58	+ 8.6	21	3	39	...	3	66
Total United States	3,987	3,924	3,583	+ 10.1	2,837	403	747	236	755	4,978

Drilling activity continues high

[*Continued from Page 13*]

twice as numerous as one year previously.

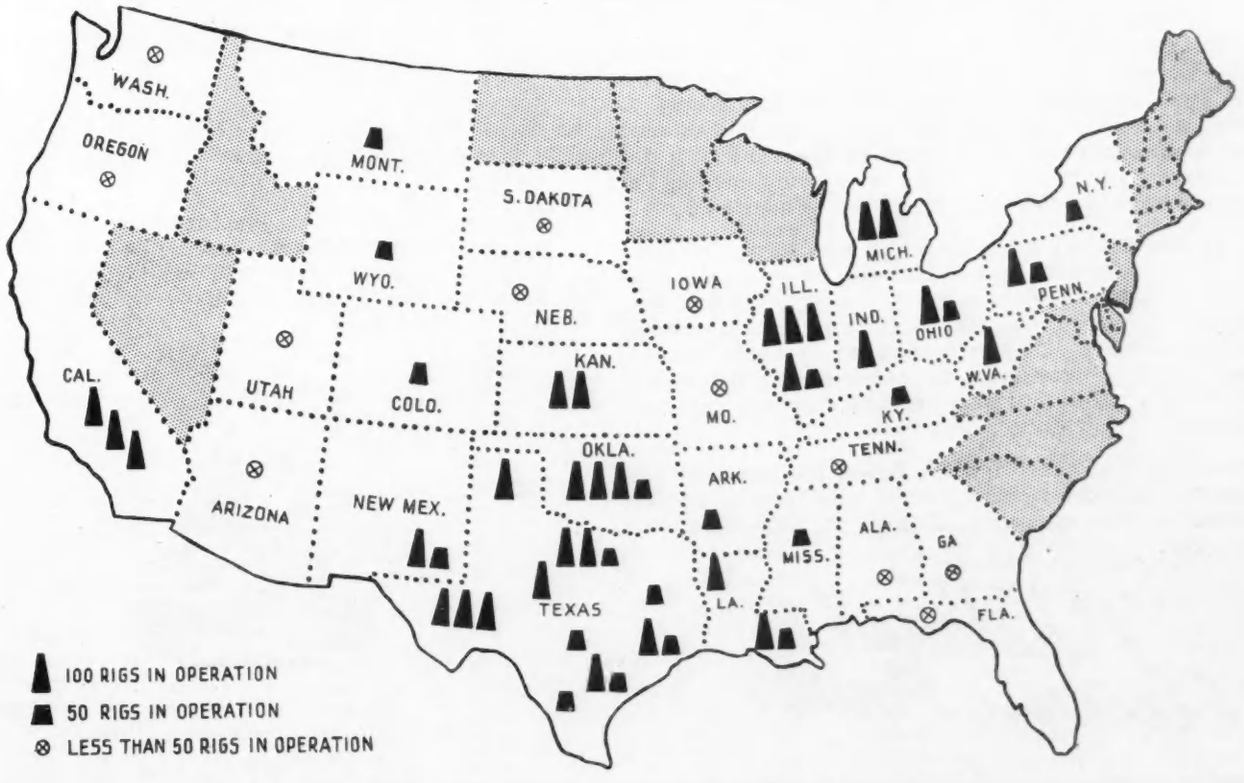
Nebraska has attracted 14 drilling rigs, as compared with only a few a month ago, in consequence of the Forest City Basin development, although severe weather has interfered with actual drilling progress.

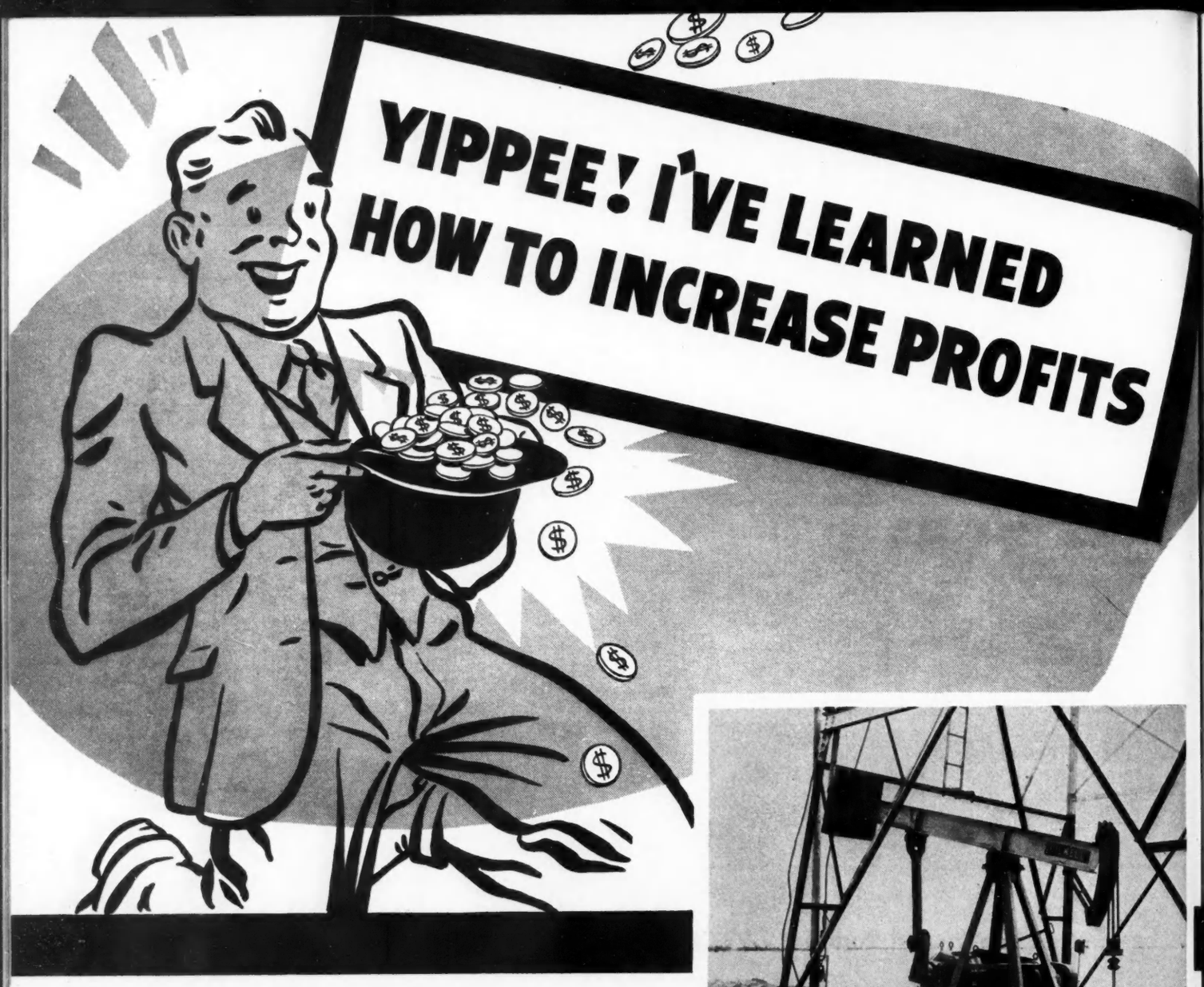
North Texas is more active than a month ago, and small gains are indicated also in the Texas Panhandle, West Texas, West Central Texas, and New Mexico.

Changes in the number of active operations since a month ago have been relatively small in California, Arizona, Eastern Texas, Southwest Texas, North Louisiana, South Louisiana, Alabama, Mississippi, Florida, Iowa, New York, Pennsylvania, and West Virginia.

Current activity is smaller than that on January 1 in Colorado, Montana, Wyoming, Oklahoma, Kansas, Missouri, Michigan, Kentucky, Ohio, Tennessee, and on the Texas Gulf Coast.

Increased Number of Rigs in Operation February 1, 1940

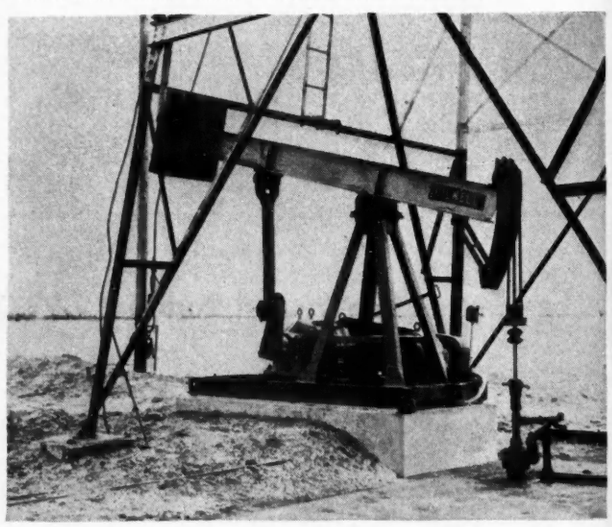




"BELIEVE me, I've learned through experience that there's *one sure* way to increase profits . . . by whittling down production costs, maintenance and fixed charges. Plenty to think about, all right — you can see why I am enthusiastic when I can see how completely Purchased Electric Power did *all* these things . . . and more! Yes sir — from now on I'm sure of extra profits . . . thanks to Purchased Electric Power!"

Yes, it's true that the proved economical way to protect your allowable, for rock-bottom power charges, is by using Purchased Electric Power. Here is swift, sure power offering you these benefits . . . Instant, perpetual service . . . low operating and maintenance costs . . . less equipment depreciation . . . constant automatic performance . . . money-saving movability . . . more salvage value . . . plus the fact that *you pay only for power used.*

Like to know how Purchased Electric Power fits into your set-up? Complete details are waiting for you now at your nearest electric power service company. There's no obligation — so investigate now!



● *Leon, Kansas* —This electrically-driven pumping unit is putting production on the profit side of the ledger! Purchased Electric Power, of course . . . another typical scene picked from similar installations in every field.

Purchased Electric Power

PROFIT! BY USING Purchased ELECTRIC POWER

PETROLEUM ELECTRIC POWER ASSOCIATION

HIGHLIGHTS IN THE WEEK'S NEWS

Allowables

Texas commission proposes reinstating January order

Lon A. Smith, chairman of the Texas Railroad Commission, announced last week that plans were contemplated for revising the February Texas proration order to reinstate January allowables with the shutdowns. The announcement came as a complete surprise, as all three commissioners had signed the February order and only one law suit had been filed attacking it.

At the time of the announcement, Smith exhibited a telegram from Commissioner Ernest O. Thompson indicating his sympathy in the move.

Smith said he had wired both Sadler and Thompson, who were in Washington, but that no reply had been received from Sadler. An opinion from the attorney general as to the propriety of members of the commission authorizing secretaries to sign orders for them while commissioners were out of the city, was ruled on by that official.

Protests Minor

While a great many protests had been received against the February order, it appeared that as a general program oil men were thoroughly in accord with the plan and anxious to get back on a basis of seven-day production. Representatives of several major companies said that they were satisfied, although they found some defects that might need adjustment. Independent producers who came to Austin usually had trouble with one lease or a few wells, but had no serious objection to producing their property seven days a week at the lower rate.

The commission, however, received more than 100 telegraphic protests, a large number of which came from towns in the Permian basin. A majority of these were signed by merchants and others not in the oil business, many of whom directed their telegrams to Commissioner Smith, who is up for reelection, and stated that they were dissatisfied with the order and were paying their poll taxes.

It was impossible to determine just where the pressure arose that would cause the commission to contemplate the abandonment of its entire order. Probably the most important protest came from the Gulf Oil Corporation, which asked for hearings on nine West Texas fields, and complained that allowables had been reduced excessively. However, these hearings having been set, it would not appear necessary to abandon the entire order.

Because of the conflicting sentiments and the great amount of criticism that has been loosed since the commission announced this change, it is expected that the state-wide hearing to be held in Austin on February 16 will be an unusually stormy one.

Texas commission surveys crude and gasoline stocks

Questionnaires for a survey of Texas crude and refined stocks to tie in with a study of marketing conditions at a state-wide hearing February 16 were mailed last week to all state refiners by the Texas Railroad Commission.

Refiners were asked to give figures on present stocks of finished and unfinished gasoline and to state how present stocks compared with those of a year ago. Also asked were figures on both crude and gasoline inventories on February 1, 1940, on December 1, 1939, on March 31, 1939, and on anticipated crude and gasoline inventories on June 1, 1940.

Other questions sought information on the amount of crude immediately available in tanks in condition for dispatch, or which could be moved from place to place at will; opinions on proper economic levels for the industry as a whole on crude oil and gasoline stocks on January 1, 1940, April 1, 1940, and June 1, 1940, and a statement as to each refiner's policy with regard to inventories between now and June 1, 1940.

The questionnaire is similar to that which the commission obtained for presentation at a hearing on August 28, 1939. When that hearing was held, the commission was in the midst of the 15-day shutdown that did much to reduce surplus stocks last year.

There is no reason to believe, however, that the commission plans another shutdown now as all available reports indicate that crude stocks, at least, are at a satisfactory level. Also the demand for fuel oil makes it virtually impossible to reduce runs to stills at this time.

Hugoton gas proration revised by commission

New proration regulations for producing gas at Hugoton, Kansas, effective February 2, have been issued by the Kansas State Corporation Commission. The order divides the nine-county area into five zones according to market demand and physical characteristics of the field, for monthly allocation of production between wells.

Acreage on which wells are spaced, gas pressure and capacity to producer are the factors considered in establishing the new proration formula; four fifths of the allocation based on acreage times pressure and one fifth on open-flow potential.

Previous production allotments were based on three fourths of the acreage and one fourth on potential.

The 275 wells in the field, located primarily on 640-acre and 160-acre tracts, have a combined open flow capacity of approximately 2,000,000,000 cubic feet. Producers have a market demand of about 86,000,000 cubic feet daily. Only 112,353 acres of the 1,300,000 in the gas area have been developed.

The commission found that a well is capable of adequately draining 640 acres without appreciable waste, and that this appears to be the standard unit for present and future drilling.

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Control

Oil industry to call 18 witnesses on Cole bill

The oil industry, integrated and independent, will present 18 witnesses to testify on the administration's control bill when that phase of hearings is reached, probably around February 19, it was announced last week by the American Petroleum Institute. These witnesses will go into every phase of the situation and will discuss the problem of conservation and analyze the probable effects of the legislation, as well as attack its constitutionality.

The tentative program calls for an analysis of the bill and an opening

statement by George A. Hill, Jr., president of the Houston Oil Company, Houston; an outline of the legal history of state conservation by Robert E. Hardwicke, Fort Worth; engineering surveys of waste prevention by Ralph J. Schilthuis, Humble Oil & Refining Company, Houston; Charles V. Millikan, Amerada Petroleum Corporation, Tulsa; Robert E. Allen, California Oil & Gas Association, Los Angeles; E. G. Robinson, Shell Oil Company, St. Louis; Forest E. Dorn, Forest Oil Company, Bradford, Pennsylvania, representing the Pennsylvania Grade Crude Oil Association, and Francis E. Heath, Sun Oil Company, Dallas.

See Report on Cole Bill Hearing Pages 10 and 48

Other witnesses will include M. G. Chenev, president of the Anzac Oil Company, Coleman, Texas, who will discuss well spacing; Winston P. Henry, president of the Putnam Oil Company, Houston, representing the Independent Petroleum Association, who will discuss unit operation; Jake L. Hamon, Dallas, president of the National Stripper Well Association, who will speak on stripper wells; Harold B. Fell, executive vice president of the Independent Petroleum Association, Ardmore, Oklahoma, on market demand; John M. Lovejoy, president of the Seaboard Oil Company, New York, who will comment on the testimony of government witnesses; J. C. Hunter, president of the Gregg Oil Company, Abilene, Texas, representing the Mid-Continent Oil & Gas Association, on federal cooperation; Russell B. Brown, general counsel of the Independent Petroleum Association, Washington, on propaganda of the Department of the Interior, and two witnesses later to be named to discuss the position of land and royalty owners and to sum up for the industry.

Courts

Justice Department marks four oil cases "must"

Four suits involving the oil industry have been marked by the Department of Justice as "must" cases to be prosecuted during the fiscal year which begins July 1, next, it was revealed by Assistant Attorney General Thurman W. Arnold when he appeared recently before a House appropriations subcommittee to discuss the anti-trust division's budget for the coming year.

Those cases, Arnold disclosed, are the oil cracking case, the Pacific Coast oil case, the East Coast oil case and the petroleum marketing divorcement suit. These, he said, are "major cases which cannot be dropped and which will carry over into the next fiscal year."

The anti-trust division head made a strong appeal for an appropriation of $1,600,000, or $400,000 more than the amount approved by the Budget Bureau, declaring that in addition to 32 cases of major importance, including those enumerated against the oil industry, there should be 12 or 15 new major cases brought.

Commenting on the difficulties of operating on the restricted appropriations which are granted, Arnold told the committee that "there are numerous other situations which need attention and to which the public is demanding that we give attention."

"However," he said, "there is no use discussing those situations now. Apparently, the most I can do is ask that I be allowed to complete some of the building cases already begun. It is nothing new for us to decline to act upon complaints lodged by great groups of the public. There are in my office now considerably more than 1000 complaints which have received no more consideration than that carried by a perfunctory acknowledgment. We can only do so much. For the present we are concentrating all of our resources upon a few major accomplishments and are not dissipating our energies in shallow pretenses of action when no real accomplishment is possible."

Texas proration suit before United States Supreme Court

Determination of the validity of proration orders issued by the Texas Railroad Commission was asked of the United States Supreme Court last week by the Texas attorney general, on behalf of the commission. The Texas official filed a petition for review of a November 3 decision of the Fifth Circuit Court of Appeals affirming a district court judgment in a suit brought by Rowan & Nichols for an injunction against enforcement of certain proration orders for the East Texas field on the ground that they deprived the company of property without due process of law, in violation of the 14th amendment to the Constitution.

The company conceded the validity of the statute and of the regulations issued thereunder, the court was told in the state's brief, but attacked the method whereby the total allowable production was allocated among wells.

The suit was brought to contest an order of August 29, 1938, restricting the company's production to slightly more than 22 barrels per well per day, or a total for its lease of 111.83 barrels per day. The district court found in favor of the company, and its decision was affirmed by the circuit court.

In bringing the case to Washington, the Texas officials told the court that the company owns a lease known as its Todd "B" lease in the "fairway" of the East Texas field. It had produced over 355,000 barrels of oil up to the date of the trial.

"The oil which has been withdrawn has been replaced by other oil, which was drained to respondent's lease from other leases to the west, north and south of the respondent's lease," the state contended. "Due to this drainage, the respondent's lease still has in place beneath it substantially the same amount of oil as was originally in place beneath such lease. It has suffered no loss; on the contrary, it has made a net gain by drainage of an amount substantially equal to the amount of oil which has been produced from its lease. The respondent's lease will produce many years after the leases with thinner sands have gone out of production."

The state contended that the lower courts erred in deciding in favor of the company, and asked the Supreme Court to pass on six questions:

1. Whether the commission's proration orders are "unreasonable, arbitrary and confiscatory" of the property of the company, as charged;
2. Whether the court's order that the commission must allocate allowable daily production to the company's lease at the same ratio to the total daily allowable for the East Texas field as the estimated recoverable oil in that lease bears to the estimated recoverable oil in the field "to the exclusion of all other relevant physical and engineering factors," is proper;
3. Whether the district court order is not contrary to the rule of property in oil laid down by the Texas Supreme Court, that ownership is of oil in place;
4. Whether the company proved the illegality of the orders attacked;
5. Whether the company is entitled to attack the orders on the ground that other producers or operators are allegedly receiving a relatively larger proportion of the daily allowable production from the field than it is receiving;
6. Whether the company, having made no attack on the validity of the commission's orders for over five years, is now estopped to attack the validity of such orders.

Final issue in Madison trial before U. S. Supreme Court

Final decision of the propriety of lower court orders against those defendants in the Madison oil case not found innocent of the government's charges or not granted new trials was before the United States Supreme Court last week.

Argument in the cross-appeals of the government and the companies was heard by the court after new Associate Justice Frank Murphy, former Attorney General, took the oath of office.

In its appeal, the government contended that the Seventh Circuit Court of Appeals, from which the case was brought to Washington, erred in holding that the district court judge's instructions to the jury were erroneous; in holding that a previous court decision to the effect that an agreement by members of a combination controlling a substantial part of an industry to fix and maintain uniform minimum selling prices is unlawful per se were inapplicable to the oil case; in holding that the trial court failed to submit to the jury the question of the nature and extent of the effect of the combination upon competition on the spot markets and, particularly, upon spot-market prices; and in holding that the trial court should have instructed the jury that, even if it found that the defendants in combination had the purpose and power to raise and maintain prices, it might still find the restraint of trade reasonable and lawful.

In their cross-appeal, the companies contended that the indictment did not charge the commission of an overt act adequate to confer jurisdiction upon the district court, and that the evidence had not established the commission of such an act; that there was a "fatal variance" between the indictment and the proof; that there was no evidence to show that the defendants' acts constituted an unreasonable restraint of

trade; that the denial of new trials to these defendants, when such new trials were granted to other defendants, violated their constitutional rights to have the issues determined by a jury, in that the possession of the power to raise or affect market prices arbitrarily was a fundamental issue in the case and the jury never considered or made any finding on the question whether the defendants, aside from those granted new trials, possessed such power; and that the argument of government counsel to the jury constituted such "appeal to passion, prejudice and class distinction" as to deprive the defendants of a fair and impartial trial.

No decision reached in California off-shore case

The Department of Justice has long had under study the question of the federal government's title to the California off-shore oil fields but as yet has reached no definite conclusions, it was disclosed by former Attorney General Frank Murphy, appearing before a House appropriations subcommittee just prior to his appointment to the United States Supreme Court.

Murphy was discussing the work of the department and its need for funds for the coming fiscal year when he was asked by Representative Albert E. Carter, of California, regarding the offshore situation. He parried detailed questions regarding the matter by referring them to Alexander Holtzoff, of the lands division, and Norman M. Littell, assistant attorney general in charge of that division.

Under questioning by Carter, Littell told the subcommittee that his division is continuing "extensive research" into the legal situation to determine the rights of the government in the submerged oil lands, but denied any feeling that the government has some rights in those lands, as suggested by the congressman.

"Did you find any law that would encourage you in the belief that the federal government has some rights, other than commerce and navigation, to these submerged lands?" he was asked by Carter.

"There were some theories which have been advanced in support of such a position," he said.

"Rather fantastic theories, are they not?" the congressman insisted.

"I would not so describe them," Littell said. "I have not reached any definite conclusion in my own mind as yet."

Littell told the committee that the question of the tidal lands is tied in with that of the waters beyond and that the department is "exploring the whole field to determine what the rights of the United States government are both in the tidelands and outside of the tidelands."

"I will tell you frankly I am not going to vote to give you a cent to continue those investigations of the tidelands," Carter declared.

"Is it part of your theory that perhaps there is oil under some of this land, and by reason of the fact that there is oil there and the Navy Department needs oil, that that might give the government a superior right?" he asked.

"That theory has been advanced; something like that has been urged," Littell admitted.

"That is what you are working on?" Carter pressed.

"That is only one small corner of it," the witness protested.

"If the government has a right to that land, they have a right not only to the oil, but to anything else that is there, have they not?" the congressman continued.

"That would seem to follow very logically to me," Littell said.

The assistant attorney general told the subcommittee that three members of the staff have been assigned to the study, which should be completed "before many weeks have passed."

Associations

T. V. Moore elected chairman A.I.M.E. petroleum division

T. V. Moore, head of the production research department of Humble Oil & Refining Company, Houston, has been elected chairman of the petroleum division of the American Institute of Mining and Metallurgical Engineers, it was announced February 9 by W. H. Geis, Union Oil Company of California, retiring chairman. Moore will assume duties of his office following the annual meeting of February 12-15 in New York.

Moore was born in Omaha, Nebraska, September 5, 1907. He received a B. S. degree at Virginia Military Institute, following which he received a degree in chemical engineering from Rice Institute, then at Massachusetts Institute of Technology as masters degree in engineering. He started in the oil business with Humble Oil & Refining Company in 1929 and four years later became head of the production research department.

A prolific author of technical papers on petroleum, Moore's outstanding work in this field has been concerned with the development of mathematical formulae to determine the relationship between the rate of production of oil and gas from a reservoir and the rate of decline of the average reservoir pressure.

Moore was active in formation of the Gulf Coast chapter of A. I. M. E.

C. J. Coberly, president of Kobe, Incorporated, Huntington Park, California, was elected associate chairman of the institute's division of petroleum. During the 1940 session he will help preside over the afternoon session of the production engineering division of the annual convention of the A. I. M. E. on February 13.

Coberly, after receiving a degree in mechanical engineering from Stanford University in 1915, worked for Southern California Edison Company in the engineering department until 1918. From then until 1924 he was engineering and production superintendent in the Purox division of California Compressed Gas Company. In 1924 he organized and became president of Kobe, Inc. He has been chairman of the Pacific Coast group of the Institute and active in other technical and petroleum industry organizations.

C. V. Milliken, Amerada Petroleum Corporation, Tulsa, and H. H. Power, department of petroleum engineering, University of Texas, Austin, Texas, were elected members of the executive committee; C. H. Keplinger of Wichita, Kansas, and E. L. Rawlins, petroleum engineer, United Gas Public Service Company, Houston, were elected associate vice chairmen of production engineering.

[*Continued on page 52*]

T. V. MOORE
A.I.M.E. Chairman

C. J. COBERLY
—and Associate Chairman

State Officials Unanimously Denounce Federal Control

[*Continued from page 11*]

desirable. The Connally Act has been of valuable assistance to the states. The forecasts of the Bureau of Mines have enabled the states to restrict production to the market demand; and the stabilizing effect of the restriction upon unnecessary imports of crude oil has also been beneficial.

"But we believe that all men should have and enjoy an equal opportunity; that the rewards we receive are proportionate to the efforts made. It is our desire to leave all the rights and privileges now available to those in the future who will guide the destinies of this country. To do this, we must be constantly on our guard."

Governor Ratner was asked by Chairman Cole to explain the difference in attitude since 1934, when representatives of the state corporation testified before the subcommittee in favor of federal regulation, and replied that the state's position today is the result of longer experience under conservation policies.

Asked about the shut-down order of last August, he declared it "demonstrated the efficacy of state control" to prevent the waste which he said then threatened the producing states and the industry.

Illinois Lesser of Two Evils

The chairman also asked about the effect on Kansas of unregulated production in Illinois and was told by the governor that "as between the choice of going along unregulated and the choice of having everything controlled from Washington, the Illinois situation is the lesser of the two evils."

"Hazardous Experiment"—Phillips

Denominating the bill a "hazardous experiment which would stifle free enterprise" and contrary to the fundamentals of our form of government, Governor Leon C. Phillips, summing up for the state executives, told the subcommittee on Wednesday that "while conservation of petroleum is generally approved and practiced, neither the states nor the industry will favor conservation by federal authority."

The state authorities, he said, do not believe that the proposed cooperation between the federal and state officials will work out but "will result in confusion and a conflict of authority and will impair rather than foster conservation."

"Sponsors of the bill represent that its purpose is to aid, supplement and assist conservation by the state," he declared. "Opponents of the bill see in it a deliberate attempt to take over a great industry and to take away states' rights and supersede state authority.

"From the statements of the sponsors of the bill they appear to be greatly alarmed that our petroleum resources will soon be exhausted. The Secretary of the Interior thinks we are producing too much from our reserves. We may, therefore, expect that if such be the national policy, and the bill be enacted, that the commissioner would use the broad powers granted to greatly curtail our production. This, of course, would curtail exploration and development, increase our unemployment and bankrupt many producers. If our production were curtailed sufficient to create a scarcity, unduly high prices would follow, and more than 50,000,000 consumers would foot the bill."

There is nothing in the legislation which will benefit producers, the governor asserted, nor is any provision made to give the consumer a cheaper and better product.

So far as Oklahoma is concerned, oil is the major cash crop, and in addition pays into the state more than $30,000,000 a year in taxes, more than half the state revenue and money which is indispensable, he said.

State Problem

"Conservation of oil is a state problem, and the oil-producing states, in the exercise of their police power, can and will conserve this natural resource," he insisted.

"Most of the oil-producing states have enacted, and are enforcing, similar laws. Years of experience have shown the wisdom of conservation by the states, and it is apparent that within a few years all major producing states will have enacted such laws."

Assurances have been given, Governor Phillips told Chairman Cole, that in the near future, Arkansas, Wyoming, Montana, Kentucky and Mississippi will enact legislation and join the compact.

The Oklahoma executive ridiculed contentions that there is any approaching shortage of oil or that the legislation is necessary for the national defense, pointing to the vast supplies of shale and coal which can be used for the production of oil once the liquid supplies are exhausted and referring to testimony of army and navy officials that a war would increase demand only 15 percent, a need which could be met without difficulty.

At the same time, he pointed out, the Navy Department has refused to permit its oil reserves to be administered as provided for in the bill and has reached an agreement with the Secretary of the Interior for revision of the measure.

"If the navy is unwilling to trust its reserves to the commissioner, under the terms of the bill, it does not appear that the states should be asked to surrender their public lands to his control, or that private owners should be required to do so," he declared.

Governor Phillips pointed out that no new conservation principles are set up in the bill and contended that most of the state laws are superior to the measure "in that they take into consideration the fact that the production of oil in excess of market demand is waste, while the proposed federal act omits entirely a consideration of that form of waste."

"Years of experience in the oil-producing states have demonstrated that ratable taking, and the right to a fair share of the current market is not only equitable, but is the essence of conservation," he told the subcommittee.

"If this bill should be enacted into law, there will be no end to the conflict of authority and confusion which will ensue.

"When we look at governmental regulation of business, can we say it will improve the oil industry, or the lot of these American citizens engaged as they now are in private employment?" he asked. "Can we expect the administration of our oil fields by the government to be better than its agricultural efforts have been in Oklahoma?"

Governor Phillips was asked by the chairman what he thought of having Congress write into the legislation approving the interstate compact the conservation principles which should apply, but the state official refused to commit himself without knowing definitely what such principles were.

The chairman indicated the view that the interstate compact has accomplished little toward conservation, and disclosed that a similar attitude is taken in a preliminary report prepared for the Federal Power Commission by its principal engineer, not yet submitted to Congress formally.

He read from the conclusion of that report, in which the engineer recommended federal legislation, and asked the governor for his views. Governor Phillips declared he could not answer the report without first studying it and it was agreed that the state authorities would be given an opportunity to read and answer it before the end of the hearings.

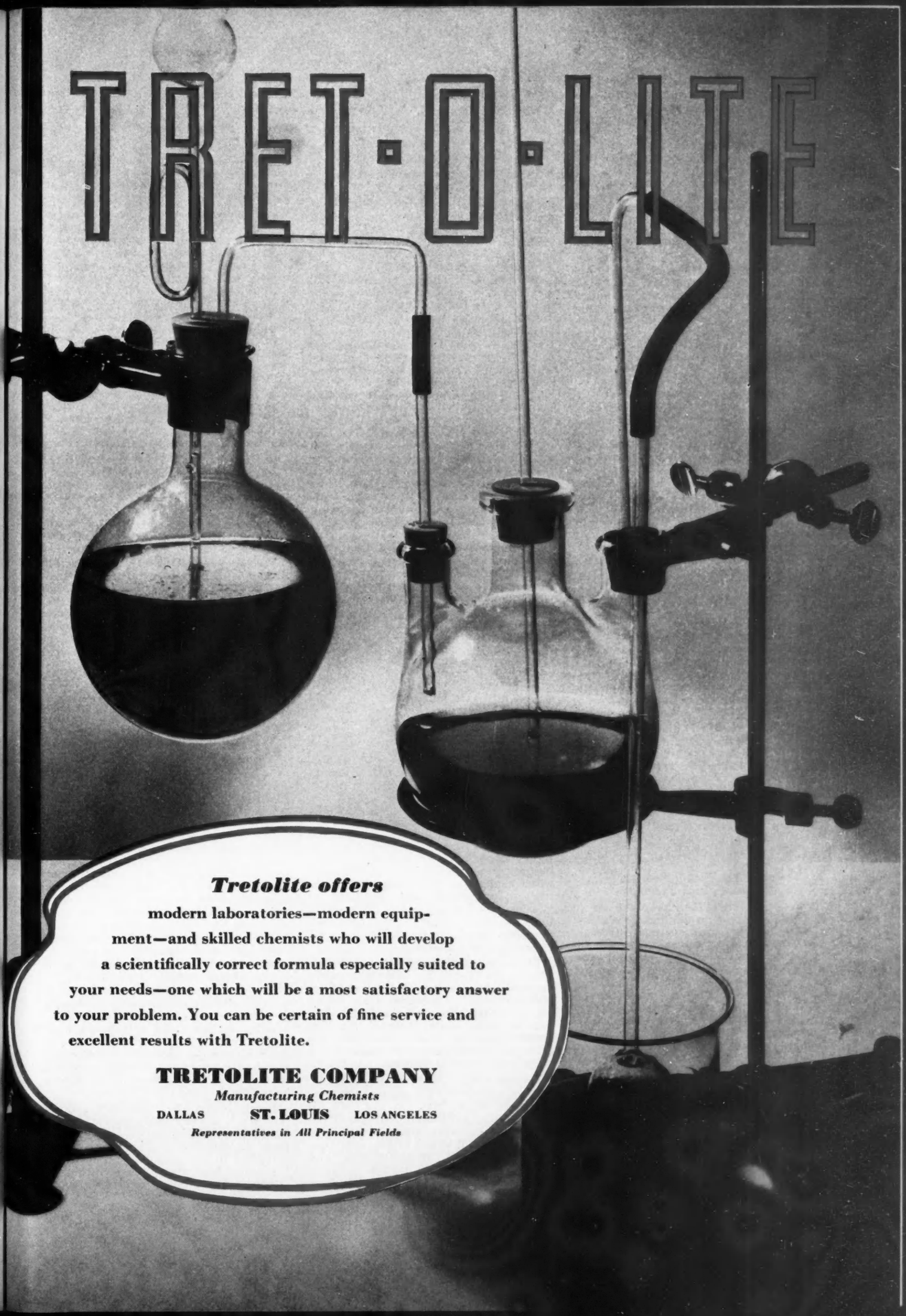
Power Commission Wants Bill

The report was made by the Bureau of Engineering of the Natural Gas Section of the Federal Power Commission, and was summarized by the commission's chief engineer, C. C. Brown, as follows:

"After careful review of the activities of the Interstate Oil Compact Commission and the determination from other authentic sources of the wastage of natural gas that is taking place both within the compacting states themselves and within states not in the compact, it is my definite opinion that the proper and adequate conservation of petroleum, natural gas and other hydrocarbons, and the prevention of wastage threof, cannot be satisfactorily accomplished through state control, either individually or by means of state compacts.

"The history of the compact here reviewed discloses nothing of a tangible nature that has been accomplished either in conservation, the prevention of waste, or even in the standardization or improvement of state legislation dealing therewith. The State of Illinois, one of the original signatory states in the compact, has, upon reaching the status of a major petroleum-producing state, dropped out of the compact, and has not yet enacted conservation legislation. Conservation legislation in other states is either inadequate or ineffectually administered.

"State compacts similar to the one here reviewed have no authority, no power, and no means of enforcing anything. They can neither compel nor



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Representatives in All Principal Fields

retain the membership of the oil- or gas-producing states. Neither can they prescribe or enforce state legislation. Under these conditions they are powerless to accomplish anything under the interchange of information, ideas and suggestions.

"It is my firm conviction that the only method of effectually, impartially and definitely solving this problem will be the enactment and administration of federal legislation.

"Petroleum and natural gas, unlike coal, metals and other solid minerals, are migratory commodities that do not respect state lines, and the extent of their migration or drainage is limited only by the physical underground boundaries of the pools in which they concur. Numerous examples exist where these pools extend on either side of state lines. One noticeable example is the largest natural gas field in the country. This field extends from southwest Kansas, through the Oklahoma Panhandle and down into the Texas Panhandle. In Kansas it is known as the Hugoton field and in Texas as the Texas Panhandle field.

"It is my further conviction that the most feasible, economical and fair method of developing and operating the oil and gas pools of the United States is that of unitized operation.

"Under this method of operation the boundaries of the pool are determined as early as possible and are subsequently extended or restricted in accordance with the latest drilling information.

"Owners of acreage or operating rights included within the producing or proven limits of the pool, share the net returns from production in proportion to the acreage they control.

"Development of the pool is carried on in an orderly manner with a total absence of feverish drilling, and excessive and uneconomical production and wastage. Problems of drainage are obviated, wells are economically spaced, and operated, all of which tends to lengthen the producing life of the pool and assure the maximum ultimate production of petroleum and natural gas therefrom.

"It is, therefore, my recommendation that appropriate federal legislation be enacted, completely controlling the production, conservation and wastage of petroleum, natural gas and other hydrocarbons in the United States."

Public Lands Administration Shown Incompetent

Federal control has shown itself to be "incompetent" as administered in the public lands, it was declared by Warwick M. Downing, Colorado representative on the compact commission, first of a series of state officials to discuss the measure.

"We now have federal control of oil and gas on the public domain, a perfect picture of what federal control means," he asserted. "The record emphatically demonstrates the danger of extension of federal power to the exclusion of local government. The record of federal control on public lands presents an almost unbelievable picture of what should not be done."

Further, he said, federal control would mean that the price for crude as an important element of conservation would be ignored, so that the public might be forced to pay high prices at times when the commissioner felt there was too much oil and curtailed production, while the producer might receive little for his product at other times when output was ordered increased.

State Representatives Quizzed on Shutdown

Other state representatives who explained how their states are handling the problem included O. C. Bailey, chairman of the Arkansas Oil and Gas Commission; William S. Ryan, deputy attorney general of Pennsylvania; Dr. R. A. Smith, Michigan state geologist, and James B. Griffith, Wyoming Commissioner of Public Lands.

Representative Wolverton, who was absent at the opening of the hearings, returned in time to question the state officials exhaustively regarding the shutdown of last August. Each representative had an explanation of his state's action as based on conditions peculiar to its own situation and refused to admit that the price situation had anything to do with the shutdown order. The New Jersey congressman declared his dissatisfaction with the responses to his questions and expressed the hope that eventually he would find someone who would give him the "real" explanation for a coincidental shutdown in a number of states.

Governor Ratner was followed by the executives of a half-dozen other states who briefly expressed their opposition to the legislation as an invasion of state rights.

"This bill embodies proposals for the extension of federal authority which are neither necessary nor warranted by the condition of the industry at this time," Governor Homer A. Holt of West Virginia asserted.

Governor Ralph L. Carr of Colorado told the subcommittee that his state is "apprehensive" of the bill, not because of its immediate effect, since current production is small, but "because of the conditions which may obtain when it starts producing oil on a large scale" from its vast shale reserves.

Demanding that the sponsors of the measure show its necessity, Governor John E. Miles of New Mexico, told the subcommittee "there is no crisis in the industry which has best weathered the depression," while Governor Carl E. Bailey of Arkansas attacked the "ambitions of the head of some bureau" which make it necessary for the executives of sovereign states to come to Washington "to plead for the protection of states' rights," and declared there has been an utter failure of proof of waste in the industry.

Pointing out that the state's conservation law calls for almost exactly those things which would be required under the bill, Chairman Cole asked why Arkansas opposed the legislation, but Governor Bailey pointed out that the difference is between voluntary acceptance of conservation and forced submission to long-distance regulation.

Governor Roy A. Ayers of Montana, former member of Congress, asserted there is nothing in the bill to protect the consumer and predicted that if the government secured control of production it would follow with control of refining, transportation and prices and, eventually, of use.

"What we want today is less legislation and more opportunity to work out our own problems," he told the subcommittee.

Charging that the measure was a violation of federal and state constitutions, Governor Nels A. Smith of Wyoming declared the legislation was unnecessary and repugnant to the people of the oil-producing states.

Chairman Cole put into the record a telegram from Governor W. Lee O'Daniel of Texas contending that there is "no necessity for legislation which would transfer from the state to the federal government the power to regulate and control the production and conservation of any of our state natural resources." The interests of all will be better served, he said, by improvement and extension of cooperation between the various states, rather than completely destroying all state control.

The chairman also received a telegram of opposition from Governor Paul V. Johnson of Mississippi and a letter from the commissioner of the Louisiana Department of Conservation.

During the course of the hearing, Texas Railroad Commissioner Jerry Sadler told the subcommittee that he and Col. Ernest O. Thompson were available for examination in the event more information was wanted than was presented during the New Orleans hearing.

First answer to the charges of C. C. Brown in his report to the Federal Power Commission was made by Hiram M. Dow, New Mexico member of the Interstate Oil Compact Commission, who denied that the states are powerless to develop adequate conservation practices and asserted they are moving toward full conservation "as rapidly as science shows the way."

Dow denied that Illinois has formally dropped out of the compact, and warned the subcommittee not to lose its sense of proportion when considering the situation in that state, pointing out that its known reserves of 500,000,000 barrels are only about 3 percent of the national total and predicting that Illinois, like other states, would soon learn by experience that conservation was desirable.

The New Mexico official devoted considerable time to a discussion of the energies report of the National Resources Committee and pointed out that in that report it was admitted the waste depends on price. He defended market demand limitation of production on the ground that no conservation can be accomplished which does not eliminate the waste occasioned by production in excess of the ability of the market to absorb output.

In limiting production, he admitted, price is effected, incidentally or directly, and the maintenance of a balance between demand and supply tends to stabilize price, but, he contended, the restriction of production to market demand as fixed by the Bureau of Mines is not an artificial device for raising prices.

Holding that the states are competent to deal with the problem, Hugh M. Morse, Mississippi oil and gas supervisor, explained the progress of conservation in his state and outlined the legislation now under consideration.

"The factual, incontrovertible record

of prices refutes the charge that proration has increased the public's cost of motor fuel, and the same situation applies to the other petroleum products," the subcommittee was told by Andrew F. Schoeppel, chairman of the Kansas Corporation Commission.

"Furthermore," Schoeppel declared, "the full savings to the public brought about by orderly and scientific rates of flow developed under the proration program, are far in excess of the figures. Another 10 or 20 years may be necessary to enable us to measure the total gains in increased recovery, decreased expenses, stabilizing prices and costs, and insuring the national safety and public convenience.

"As a state commission, we realize that we have not administered our conservation act perfectly, but we have honestly attempted to prevent waste as best we knew how."

The oil states appreciate the assistance provided by the Bureau of Mines forecasts and the Connally Act, he testified. "We need the benefits of the limitations imposed upon the importation of petroleum and its products by the federal government, but we do not need federal control," he added.

No Oil Scarcity

"We are convinced that there is no scarcity of oil and that there will not be even in the distant future. New reserves are being discovered and the discovery of such reserves is being promoted by the states. The Cole bill grants no power that is not conferred by the state statutes, while the states possess power not possessed by the federal government. The restriction of production to consumptive demand or economic needs is not mentioned in the Cole bill because the federal government does not have the power to include it. The states are better situated to prevent physical waste than is the federal government, and the State of Kansas will and has conserved its natural resources."

Testifying in a straightforward manner which earned from him the commendation of Representative Wolverton for his frankness, A. Andreas, New Mexico state geologist and a member of the state oil conservation commission, told the subcommittee that the shutdown of production in his state last year was adopted solely as a result and for the purpose of combatting the price cut.

The first state official to admit readily that the intent of the shutdown was to force a return to the uncut price, Andreas told Representative Wolverton, who has questioned every witness at length on that subject, that the New Mexico authorities took it for granted, when the price was cut, that there was a surplus of oil on the market, and that they felt that to produce oil that must be sold at a loss was waste to be prevented.

Andreas frankly answered the congressman's questions regarding the attitude of the New Mexico authorities but refused to go into details regarding the Oklahoma City meeting of the compact commission which preceded the general shutdown. He took the attitude that conservation includes stabilization and, when Wolverton commented that no thought had been given to the consumer when the states ceased production and the users of oil products were not given an opportunity to benefit by lower prices, retorted that when the price for crude was cut no thought had been given the producers.

His discussion of the shutdown came after he had outlined the steps taken by the state to deal with its oil problems in cooperation with the industry, which involved close questioning by Chairman Cole and Congressman Wolverton as to gas/oil ratios, the failure of the state commission to issue any formal orders on ratios until last month and the reason for much higher ratios than those adopted by Texas.

Andreas pointed out that the ratios designated for state and private lands under commission control were much lower than those obtaining on federal lands under Interior Department supervision, and said that when the state had suggested the federal government reduce the ratios in pools which underlay both federal and state lands, the commission was advised to attend to its own affairs.

"During the last 6 months of 1939, ratios in excess of 5000 feet on federal lands increased slightly over 22 percent whereas the increase on lands under supervision of the conservation commission was less than 1 percent," Andreas said. "We would like to leave this question with your committee, in view of these facts: should not the New Mexico commission be given conservation jurisdiction over federal lands within the state if the secretary's sole object is true conservation?"

The witness charged that Secretary Ickes, in testifying before the committee last year, included misleading statements "either through ignorance or misunderstanding of the facts of the whole situation, or with a mind completely closed to conditions insofar as state control is concerned, in his effort to extend his authority."

"How," he asked, "can the secretary through the bureau and other petroleum agencies, spending $1,400,000 each year, hope to guide, to improve methods or decide questions of waste, which can be determined only through research, an industry which, according to the American Petroleum Institute, has a total investment of 15 billions of dollars, an annual payroll of a billion and a half dollars, expenditure of 12 million dollars a year in research and pays government taxes of a billion and a half dollars each year?"

Winding up the presentation of the New Mexico situation, Glenn Staley, proration umpire, answered the charges of the Interior Department that there was a great waste of gas in the Lea County fields, explaining that some of the wells were gas wells in which oil production was incidental, while the gas from other fields would be usable only after expensive treatment.

Declaring there is no economic waste in Montana, Robert P. Jackson, secretary of the State Oil Conservation Board, testified that the federal state and private lands are all administered under approximately the same law and there has never been any conflict between the federal and state authorities. At least 20 percent of the wells in the state are subject to the exclusive jurisdiction of the Interior Department but the same regulations have been adopted by the state for other wells. However, he contended, it would be impossible for most of the producers in the state to comply with the proposed control act.

Constitutionality Challenged

Constitutionality for the legislation was challenged in a brief filed by Reford Bond, chairman of the Oklahoma Corporation Commission, in which it was contended that while the federal government has the right to limit the importation of petroleum, and to prohibit the shipment of "hot" oil in interstate commerce, it is without authority to control and regulate the production of oil in the sovereign states.

Analyzing the bill and the results of its adoption, William J. Armstrong, oil and gas conservation officer of the Oklahoma Commission, held that none could quarrel "with that part of the bill which involves the question of preventing waste in the production of oil and gas, because that question is not debatable," but that the controversy centered around what laws and regulations should be established and how and by whom they should be administered.

"The proposed bill is drastic beyond the necessity and practicability at this time," he asserted. "It gives enormous power and authority to one person to make arbitrary rules and regulations that can confiscate without compensation the property of individuals and companies in the name of conservation."

Armstrong referred to the extensive discussion of the gas/oil ratio, and explained that while it was one of the first recognized factors in the control of production, its weight in conservation of reservoir energy has been lessened with the advance of knowledge and because of the difficulty of determining the proper ratio.

"It is fairly well agreed that the rate of decline in reservoir pressure per unit of crude oil produced is far more proper and indicative of reservoir conditions than is gas/oil ratio taken by itself," he declared. "This is pointed out as an example of the great importance which can and has been gathered around a single factor which has long ago been superseded by other and more important factors. In other words, bottom-hole pressure is probably the most important factor in the control of reservoir energy as now known, at least from a practical standpoint."

The witness pointed out that not only would there be conflict between federal and state authorities if the bill was enacted, but the position of the oil operators would be made most difficult, there would be set up of necessity a vast organization, not only in Washington but in the field, and the money and experience expended by the states in dealing with the problem would be wasted.

"Our Oklahoma law covers everything that is covered by the proposed bill, and more," he protested. "There is no issue that can be raised between the agents of the federal government, the agents of the state or the representatives of the industry on the fundamental question of conservation. The only controversies are the kind of

rules to be adopted and who shall administer these rules.

"I contend that the various oil-producing states which do have conservation laws, adequately provide for the prevention of waste, both above ground and below ground, and that this is the fundamental basis of conservation. All of the basic principles, as now recognized by students of conservation, are adequately provided for in the various states' conservation laws, rules and regulations."

If congress enacts legislation of the type of the Cole bill, he warned, it will be essential that some provision be incorporated to compensate "the unfortunate lease and royalty owner whose property, under these rules, could be confiscated. This bill, if it became a law, would retard the discovery and development of unknown reserves because of the uncertainty it would create. It would, in a manner, re-establish what is known as the 'carpet bag rule' from Washington, so much detested in Oklahoma and the Indian Territory before statehood.

"There must be some certainty as to what the wildcatter can do with his well if he discovers a new pool, or he will not risk his money in prospecting in new reserves. It is essential to the life blood of the nation that our great unknown petroleum reserves be discovered and developed."

Final witness to be heard was Elwood Fouts, Houston, who told the committee that an oil field cannot be developed and produced without avoidable waste unless every well in it has a pipe line or other outlet connection through which it can produce its ratable portion of the daily production.

Evolution of state conservation measures, he declared, has provided proper outlets for fields and individual wells, and the proper functioning of the measures was insured by easy remedy afforded individual operators before the respective commissions and local courts.

A substituted federal-control program, of necessity more cumbersome in administration, would defeat its avowed purpose — conservation, Fouts said.

Because of lack of time, the subcommittee was unable to hear presentation of the Interstate Oil Compact Commission during the week, and, because of a lawsuit to be heard in Austin February 12, it was felt that it might be impracticable for Col. Ernest O. Thompson to return to Washington immediately. It was agreed, therefore, that the compact representatives would be heard February 19, at the opening of the hearings for representatives of the industry.

Schedule Cayuga field hearing February 15

The Texas Railroad Commission has scheduled a hearing at Austin on February 15 to consider a higher allowable for wells in the Cayuga field, Anderson and Henderson counties. Pan American Petroleum Company has advised the commission that unless more Cayuga crude is available it will have to purchase crude from South America or Louisiana.

A.I.M.E.

[*Continued from page 47*]

Officers re-elected for the year were: B. C. Craft, associate professor of petroleum engineering, Louisiana State University, Baton Rouge, secretary and treasurer; W. H. Geis, Union Oil Company of California, Los Angeles; E. A. Stephenson, professor of petroleum engineering, University of Kansas, Lawrence; and W. B. Heroy, Pilgrim Exploration Company, Houston. Members of the executive committee: F. B. Plummer, geologist, Bureau of Economic Geology, University of Texas, Austin, vice chairman of production engineering; Roy E. Collom, vice president of Continental Oil Company, Los Angeles, and F. G. Tickell, professor of petroleum engineering, Stanford University, California, associate vice chairmen of production engineering; J. Terry Duce, geologist, The Texas Company, New York, vice chairman for production; Basil B. Zavoico, Chase National Bank, New York, associate vice chairman for production; D. L. Katz, assistant professor of chemical engineering, University of Michigan, Ann Arbor, vice chairman for engineering research; Lyon F. Terry, department of petroleum economics, Chase National Bank, New York, vice chairman for economics; and Walter Miller, vice president of Continental Oil Company, Ponca City, Oklahoma, vice chairman for refining engineering.

A.P.I. plans expanded vocational training program

An expanded program of vocational training for the production branch of the petroleum industry has been planned for 1940 by the American Petroleum Institute's Division of Production Committee on Vocational Training. The committee recently was appointed with a substantially increased membership by W. H. Meier, Atlantic Refining Company, Dallas, who is chairman of the division's Central Committee on District Activities and of the vocational-training group.

The tentative program includes closer cooperation with the federal Office of Education and state vocational authorities who conduct the employe classes, extension of the training program to oil states which do not yet have oil-production classes, and development of a number of additional courses and texts. To provide closer contact with authorities in states which have not had petroleum courses, representation on the API committee has been increased to include officials of nine leading oil-producing states, and the number of industry representatives also has been considerably increased.

State vocational representatives on the vocational committee are L. K. Covelle, state supervisor of Trade & Industrial Education, Stillwater, Oklahoma, vice chairman; C. A. Bell, director of vocational education, Springfield, Illinois; J. C. Beswick, chief, bureau of trade & industrial education, Sacramento, California; W. J. Breit, state supervisor, trade & industrial education, Little Rock, Arkansas; J. R. D. Eddy, state supervisor, industrial education, Austin, Texas; G. H. Fern, director, state board of control for vocational education, Lansing, Michigan; E. G. Ludtke, state supervisor, trade & industrial education, Baton Rouge, Louisiana; H. B. Northrup, director, mineral industries extension, State College, Pennsylvania; Laurence Parker, state supervisor, trade & industrial education, Pittsburg, Kansas; and B. H. Sewell, state supervisor, trade & industrial education, Santa Fe, New Mexico.

Petroleum industry representatives are H. H. Anderson, Shell Oil Company, St. Louis, Missouri, representing the API Committee on Public Relations; W. L. Bagby, Shell Oil Company, Ventura, California; A. H. Bell, Continental Oil Company, Los Angeles; Lot Bowen, Western Gulf Oil Company, Bakersfield, California; M. E. Brock, Gulf Oil Corporation, Houston; Geo. P. Bunn, Phillips Petroleum Company, Bartlesville; E. L. Davis, The Texas Company, Los Angeles; D. H. Fortine, Barnsdall Oil Company, Goleta, California; C. L. Hightower, United Gas Pipe Line Company, Houston; D. A. Howard, Cities Service Oil Company, Bartlesville; A. D. Jackson, Standard Oil Company of California, San Francisco; W. F. Jones, Shell Oil Company, St. Louis; J. H. Kelly, Atlantic Refining Company, Dallas; R. B. Kelly, Pure Oil Company, Olney, Illinois; J. G. Montgomery, Jr., United Natural Gas Company, Oil City, Pennsylvania; E. H. Musser, State Division of Oil & Gas, Taft, California; M. J. Norrell, Magnolia Petroleum Company, Dallas; J. A. Ritter, Sun Oil Company, Dallas; R. B. Roaper, Humble Oil & Refining Company, Houston; J. D. Robinson, Union Oil Company of California, Bakersfield, California; J. French Robinson, Peoples Natural Gas Company, Pittsburgh; J. P. Rockfellow, Union Oil Company of California, Los Angeles; G. E. Ruggles, Chanslor-Canfield Midway Oil Company, Ventura, California; M. E. Schwarz, Seaboard Oil Company of Delaware, Dallas; C. G. Staley, Lea County Operators Committee, Hobbs, New Mexico; A. W. Thompson, A. W. Thompson, Inc., Houston; C. R. Weidner, Sinclair Refining Company, Independence, Kansas; J. C. Young, Tidewater Associated Oil Company, Tulsa; A. W. Breeland, Lone Star Gas Company, Dallas, secretary; and W. A. Allred, Lone Star Gas Company, Dallas, assistant secretary.

Permits issued for 88 Illinois tests

Permits for 88 wells were granted by the Illinois State Department of Mines and Minerals last week, representing a gain of 30 over the previous week's 53.

Devonian play in the Salem and Centralia townsite fields continued to hold Marion County in the lead with 32 permits. Tests authorized in Fayette County totaled 22, while Clinton County had 9.

Five permits each were authorized for Wabash and White counties, 2 each for Richland, St. Clair and Wayne counties, and 1 each for Clay, Edwards, Franklin, Gallatin, Hamilton, Hancock, Jefferson, Lawrence and Shelby counties.

Application filed for new Anahuac field allowable

The Texas Railroad Commission has scheduled a hearing for February 15, at Austin, to consider the application for an increased allowable in the Anahuac field, Chambers County.

MEN IN THE INDUSTRY'S NEWS

HARRY F. SINCLAIR headed a group of 12 officials of Consolidated Oil Corporation and Sinclair Prairie Oil Corporation on a tour of Texas properties last week. Other members of the party were E. W. Sinclair, finance chairman, Consolidated Oil Corporation; W. L. Connelly, board chairman, and H. L. Phillips, president, Sinclair Prairie Oil Corporation; H. R. Gallagher, president, Consolidated Oil Corporation; Daniel T. Pierce, assistant chairman of Sinclair interests; E. C. Crawley, head of the production department of Consolidated Oil Corporation; Byron Meredith, Gulf Coast production superintendent of Sinclair Prairie Oil Corporation; W. W. Baker, H. A. King, Dick Bear and Orin Roberts.

VICTOR H. SCALES and Rogers Houchins, Department of Public Relations of the American Petroleum Institute, New York, were in Dallas and Houston last week in connection with the work of the department. Along with stories of the unusual weather encountered in the Southwest, they are taking back to the big town an account of how their placid composure in time of stress averted panic among hotel guests when a fire routed them from their room at Houston during the wee hours of the morning.

D. HOUSTON BOLIN, Wichita Falls operator and civic leader, was elected president of the North Texas Oil & Gas Association at board meeting held February 5. A. R. Dillard and T. J. Waggoner, Jr., were chosen vice presidents, and Dave G. Gray was renamed executive vice president. The annual meeting and banquet of the association will be held February 24 at Wichita Falls, according to John F. O'Donohoe, retiring president.

NOEL ROBINSON last week resigned as vice president and director of Tide Water Associated Oil Company to accept a position as vice president and director of South Penn Oil Company at Pittsburgh, Pennsylvania. George J. Hanks, vice chairman of the operating committee of Tide Water Associated Oil Company's eastern division, has been elected a director to succeed Robinson.

WALTER W. PROCTOR, scout for the Gulf Oil Corporation in the East Texas field with headquarters at Tyler, has been transferred to Victoria for duty in Southwest Texas.

ARNOLD JONES, Kansas state corporation commissioner, declared in a radio address last week that regulation of Kansas' production to prevent waste will "double or triple the amount of this valuable natural resource which Kansas will ultimately recover and produce."

MELVIN E. FULLER, Eastern division geologist for The Carter Oil Company, Mattoon, was named president of the Illinois Geological Society when the organization held its annual meeting at Olney. Also elected were B. Maxwell Miller, district geologist for The Texas Company, Mattoon, vice president, and James G. Mitchell, geologist for The Pure Oil Company, Clay City, secretary-treasurer. Ira H. Cram, chief geologist in the southwestern division for The Pure Oil Company, principal speaker, compared the geological structure of Illinois to the Mid-Continent field.

W. A. BADEN and Paul R. Smith, formerly with Warren Petroleum Company, have joined Anchor Petroleum Company, Tulsa, Baden as vice president and Smith as secretary-treasurer.

W. W. BAKER last week was appointed chief of operations for Sinclair Prairie Oil Corporation in the South Texas district. Made general superintendent of construction in 1925, his appointment is in line with tentative plans to construct a refinery and terminal at Corpus Christi.

W. D. CARLETON, production superintendent for Fohs Oil Company at Lake Charles, Louisiana, has been promoted to general superintendent of the company's operations. He succeeds W. D. Isaacks, resigned.

HENRY LEY, president of the American Society of Petroleum Geologist, San Antonio, discussed "Appraisal and Evaluation Background" before the Houston Geological Society last week.

RALPH NEWCOMER has been named district superintendent for Fohs Oil Company in the Houma area of South Louisiana.

JAMES F. McMANMON, Tulsa oil operator, has joined the National Bank of Tulsa as special representative for the oil and gas industry. A graduate of Princeton University, he entered the Mid-Continent in 1921 and has a wide acquaintance among oil men and in banking circles.

JAMES F. McMANMON

FREDERIC MELLEN, geologist credited with discovery of Mississippi's first commercial oil field, was honored guest at a gathering of oil men at Tinsley last week. Mellen's exhaustive examination of an underlying oil trap while making a study as part of a WPA geologic survey of the state was described by Dr. W. C. Morse, state geologist. A report on his examination preceded discovery of the Tinsley field last year.

F. H. RHEES, Sinclair Prairie Oil Company, Tulsa, has been made assistant division superintendent of the northern division. John A. Wolfe is division superintendent.

D. C. NUFER, formerly in the geological department of Carter Oil Company at Tulsa, and for the past 3 years engaged in consulting work, is now a geologist for Burke-Greis Oil Corporation, Tulsa.

JOHN J. LARKIN, JR., of the geological department of Sinclair Prairie Oil Company, has been transferred from Tulsa to the Wichita office on a special assignment.

JACK R. MARTIN, engineering department, Sinclair Prairie Oil Company, Tulsa, has been transferred to Jackson, Missisippi.

CLARENCE MARTIN has joined the engineering department of Sinclair Prairie Oil Company, Tulsa.

DON M. MATTOCKS, attorney for Sinclair Prairie Oil Company, Tulsa, has resigned to become attorney for Warren Petroleum Corporation, succeeding Paul R. Smith, resigned.

R. B. ROARK, vice president of Shell Oil Company, Inc., Tulsa, presented 10-year and 15-year service awards to some 200 employes of the company at a luncheon held in Oklahoma City last week.

C. E. WEBER, Humble Oil & Refining Company, discussed "Metering High Pressure Gas" at the monthly meeting of the Gulf Coast section of the American Institute of Mining and Metallurgical Engineers last week in Houston.

WALLACE GORDON, geologist for Superior Oil Company in charge of operations in West Texas, North Texas and Oklahoma, was in Houston last week on business.

C. M. SHULL, superintendent in southern Oklahoma for The Texas Pipe Line Company, has retired after 32 years' service with the company.

DR. C. E. DECKER, University of Oklahoma, will head a three-day geological field trip through southwestern Oklahoma, starting March 14. Arrangements are being handled by a committee headed by Graydon Laughbaum, division geologist for Sinclair Prairie Oil Company.

JOE A. CLARK, president of the West Central Texas Oil & Gas Association, is cooperating with the Albany chamber of commerce in handling arrangements for

an oil men's complimentary dinner to be given February 12. Principal speakers will be Ed A. Landreth, Fort Worth, who developed the Ibex pool, and Charles F. Roeser, Fort Worth, who drilled the Cook field discovery well.

W. B. ISAACKS has resigned as general superintendent of Fohs Oil Company to operate independently. He will open an office in New Orleans.

E. B. RUBSAMEN, JR., is head of Trinity Drillers, Inc., which opened an office last week in the Commerce Building, Houston.

DIED:

L. B. DENNING, 65, president and one of the founders of the Lone Star Gas Company, died February 6 at his Dallas residence. Active for 38 years in the natural gas industry in the Middlewest and Southwest, he was recognized as a leader in natural gas circles. In 1921 he was elected president of the Natural Gas Association of America, and in 1936 similar honors were bestowed by the American Gas Association.

His early life was spent on a farm near Greensburg, Indiana. Handicapped by a meager rural education, he launched his career in Cincinnati carrying water for a construction gang, later becoming a car checker in the railroad yards and a lumber clerk. With a desire to engage in law practice, he utilized his spare time studying law books and gained admittance to the bar in Columbus, Ohio, in 1899.

Immediate success as a lawyer paved the way for his entry into the natural gas field. Initial efforts consisted of private practice in a small Southern Ohio city. He became attorney for a gas company in 1902, and was representing the Treat & Crawford interests, Pittsburgh, when the latter and E. R. Brown, now chairman of the board of Magnolia Petroleum Company, organized the Lone Star Gas Company in June, 1909, to link the Petrolia gas field by pipe line with Fort Worth and Dallas. Denning was one of the original directors of the Lone Star Gas Company, and in 1915 became its president. Meanwhile, he became general counsel for the Ohio Fuel Supply Company in 1910, advancing to vice president in 1918. He served as an executive officer of numerous gas and oil concerns, including the Tropical Oil Company, Penn-Mex Fuel Company, Fayette County Gas Company and Northwestern Ohio Natural Gas Company. He moved to Dallas in 1927.

Survivors include his wife; a son, L. B. Denning, Jr., Dallas; and two daughters, Miss Mary Katherine Denning, Dallas; and Mrs. Ira Rinehart, Tulsa.

J. F. HAELY, chief petroleum engineer for the conservation department of the Kansas Corporation Commission, died February 5 at Great Bend, Kansas, of heart attack.

Haely had been active in proration matters in Kansas during the past 4 years and was instrumental in the evolution of bottom-hole pressure gauges now used in the area to obtain flowing potentials. Before going to Kansas, he was in charge of repressuring operations near Maracaibo, Venezuela, South America. His first activity in the industry was in his native New York state, where his father was active in oil development in the southern part of the state and about Oil City, Pennsylvania. He was a graduate of Cornell University.

JOHN C. BENNETT, 72, president of Bennett Drilling Company, Tulsa, died February 5. With Prairie Oil & Gas Company for 19 years, he resigned to accept a similar position with Skelly Oil Company, remaining with that company for 5 years. Later Bennett became production superintendent for New England Oil Company. In 1932 he organized the Bennett Drilling Company, which has been actively engaged in developing shallow fields in the Nowata area of Northeastern Oklahoma.

HARRY L. DEMING, former assistant to the president of Pierce Oil Corporation and manager of Ohio Oil Refining Company, died February 7 at Tuscon, Arizona. He was district sales manager for Sinclair Refining Company in the Chicago district at the time of his death.

JAMES AUGUSTUS PATTON, 64, chief engineer for Indian Territory Illuminating Oil Company, died February 4 at his home in Tulsa after an illness of almost a year. He joined the company in 1926 as chief civil engineer.

S. B. FAULKNER, 48, North Texas producer, died January 31 of a heart attack at his home in Electra.

F. G. FEHL, 64, oil operator of Breckenridge, Texas, died February 2 from injuries received at a pumping well near Breckenridge.

MARK C. DRISCOLL, 58, independent oil operator and secretary-treasurer of Gulf Stream, Inc., died February 4 at his home in Houston.

H. L. CLAYTON, 57, foreman for Gulf Oil Corporation in the Dale field, died February 2 at his home in Lockhart, Texas.

CHARLES MENDELSOHN, 75, pioneer oil operator, died February 7 in a Houston hospital.

CARL M. BEREN, 46, Kansas oil operator, died February 7 in Wichita.

Geologists tour northern Mississippi

The Mississippi Geological Society and a group of visiting gelogists scheduled a field trip for February 10 and 11 to study the Jackson, Vicksburg, Catahoula, Hattiesburg and Pascagoula formations. The trip was to start at Jackson, go to Vicksburg, and thence south to Natchez, including visits to Franklin and Wilkinson counties.

To boost production of German synthetic plants

Braunkohlenbenzin, A. G., Germany, has made a 40,000,000-mark loan to increase capacity of plants in central Germany that produce gasoline from lignite and lignite tar in Germany.

Plan program for students during exposition

A special all-day program for petroleum engineering students from schools all over the United States is being planned for the week of the 1940 International Petroleum Exposition at Tulsa, May 18 to 25, according to Dean R. L. Langenheim of the University of Tulsa engineering school, host to visiting students.

Petroleum engineering students will have an opportunity to obtain practical, first-hand knowledge of the petroleum industry through exhibits which represent factories and plants in 148 cities in 29 states.

The following schools thus far have accepted the invitation: University of Texas, Austin; Kansas State College, Manhattan; Oklahoma A. & M. College, Stillwater; University of Kansas, Lawrence; and the Colorado School of Mines, Golden.

Bureau publishes analyses of Texas crudes

Information regarding the analyses and other characteristics of nearly 500 crude oils from various Texas fields was made available last week in a report published by the Bureau of Mines.

The bureau has collected samples of oil from individual wells in many of the state's fields, as well as composite samples representing from 2 to 100 wells in some of the fields. A total of 479 samples were analyzed and the results tabulated in summary form in the report, giving data on sources of the samples and characteristics of the crude oils, and on the distillates obtained by the Bureau of Mines Hempel analysis.

Copies of the report—Technical Paper 607, "Tabulated Analyses of Texas Crude Oils," by A. J. Kraemer, Gustav Wade and E. L. Garton—may be obtained from the Superintendent of Documents, Government Printing Office, Washington, at 15 cents per copy.

Michigan offers 25,000 acres for lease

Approximately 25,000 acres of state-owned land will be offered for oil and gas lease in March by the Michigan Department of Conservation. The sale will include leases in Clare, Ogemaw, Otsego, Midland, Montmorency, Manistee, Osceola and Muskegon counties. All but one 40-acre lease is in wildcat territory.

Michigan oil production set at 23,500,000 barrels

Figures released last week by the Michigan State Tax Commission showed the state's 1939 oil production totaled 23,459,651 barrels with a well-head value of $20,936,826. Michigan has a 2 percent severance tax on oil and gas production.

December was the only month in 1939 when the price of oil averaged a dollar a barrel, the commission reported.

Gas production in 1939, dry and casing head, totaled 10,239,195,598 cubic feet with a well-head value of $1,397,815.

Unchanged prices reflect steadiness of markets

The markets during the past 10 days have been more settled than for several months, as all refined products have remained practically unchanged.

Heretofore, nearly every week has brought some changes, either upward or downward; the more recent revisions having included declines in gasoline prices and gains in prices of fuel oils and kerosene.

The interruption lately of the downward trend of gasoline prices may have occurred, however, primarily because of the increased resistance that naturally has arisen, with quotations around or below the lowest levels that will permit profit for refiners. The plant owners certainly could not show profit on gasoline at prices any lower than those now prevailing, and it is quite likely that in some instances losses are being sustained even with the present prices in effect.

Crude Oil Markets

No additional important developments have occurred in the crude oil markets following the reductions February 1 of postings in California fields. Opinion is divided as to what effect the California cut will have, some believing that it will have an ultimate beneficial effect by discouraging excessive drilling, although some contend that the price cut may undermine the voluntary crude production curtailment program, which heretofore has been relatively effective.

The California reduction has caused some concern for crude postings in the rest of the country, despite the geographical isolation of the West Coast markets. For while California has suffered by weakening of the fuel oil market, the country east of California has the handicap of a definitely weak gasoline market, due to seriously excessive gasoline stocks.

There was not, however, any further weakening of gasoline quotations by either refiners or resellers in the large consuming areas during the past week, whereas prices had been steadily declining previously.

Gasoline Stocks

Some assurance is given in the gasoline situation by the possibility that the physical limitations of storage facilities soon may be taxed. It is the opinion of some students of the subject that it may not be possible for the surplus of gasoline to become much more serious than at present because of limited tankage.

Nevertheless, there was another large addition of about 1,500,000 barrels to gasoline stocks in the week ended February 3, as production at refineries showed a further increase.

Fuel Oils Strong

The markets for heating oil have continued strong, as the weather has remained cold, but no additional increases in prices have occurred.

Similarly, kerosene has continued in good demand, and the prices of that product have been further advanced by some refiners in the Mid-Continent.

Residual fuel oils still are in strong demand, in reflection of continued brisk industrial production and the relatively light inventories of those oils.

Lubricants continue strong, as refiners still are behind in many instances in fulfillment of orders, while new export and domestic orders are coming in steadily.

PRODUCT PRICES

	Range Last Week (Cents a gal.)		Changes from Week Before	
REFINED GASOLINE				
Oklahoma Refineries:				
62 Octane and under	3¾	4⅛	...	...
63-66 Octane	4	4½	...	...
67-69 Octane	4¼	4¾	...	...
70-72 Octane	4½	5	...	...
Mid-Western Tank Car:				
62 Octane and Under	3¾	4½	...	...
63-66 Octane	4	4⅛	...	...
67-69 Octane	4¼	4¾	...	...
70-72 Octane	4½	5	...	...
NATURAL GASOLINE				
Grade 26-70:				
F. O. B. Group 3	2	...	...	...
F. O. B. Breckenridge, Texas	1¾	...	...	...
KEROSENE				
Oklahoma Refineries:				
41-43 water white	3¾	4¼	...	...
42-44 water white	3⅞	4⅝	...	...
Mid-Western Tank Car:				
41-43 water white	3¾	4¼	...	...
42-44 water white	3⅞	4⅝	...	...
FUEL OILS				
Mid-Western Tank Car:				
Range Oil	3¾	4	...	...
Gas and Fuel Oils:				
No. 1 Prime White	3¾	3⅞	...	...
No. 1 Straw	3½	3¾	—⅛	...
No. 2 Straw	3½	3⅝	...	...
No. 3	3⅜	3½	...	...
No. 5 (per bbl.)	65	70	...	...
No. 6 (per bbl.)	50	55	...	...

Trends of United States Production and Stocks

Figures are from American Petroleum Institute weekly reports, except those on crude stocks, which are from Bureau of Mines weekly reports

	Crude Oil Production (Barrels Daily)	Crude Runs to Stills (Barrels Daily)	Crude Oil Stocks (Barrels)	Gasoline Stocks (Barrels)	FUEL OIL STOCKS	
					Gas Oil & Dist. Fuels	Residual Fuel Oil
1937:						
August 28	[5]3,731,450	3,425,000	309,506,000	66,997,000	112,111,000	
September 25	3,666,300	[5]3,455,000	307,974,000	65,620,000	116,472,000	
1938:						
March 19	3,433,550	3,080,000	306,380,000	[1]93,192,000	122,067,000	
November 12	3,243,250	3,180,000	273,394,000	[6]67,551,000	34,175,000	120,491,000
December 10	3,245,100	3,150,000	[6]269,509,000	68,687,000	32,068,000	118,711,000
December 31	3,201,450	3,115,000	273,024,000	71,695,000	29,082,000	115,741,000
1939:						
January 28	3,248,250	3,235,000	271,763,000	77,279,000	26,583,000	112,766,000
February 25	3,328,850	3,185,000	271,758,000	84,597,000	23,419,000	110,252,000
March 25	3,382,350	3,225,000	273,915,000	87,561,000	21,487,000	107,551,000
April 22	3,526,700	3,280,000	277,156,000	[2]87,769,000	21,085,000	105,035,000
April 29	3,568,200	3,405,000	278,440,000	86,794,000	[7]25,844,000	108,409,000
May 6	3,580,900	3,275,000	[2]278,607,000	86,216,000	26,167,000	108,597,000
May 27	3,585,250	3,405,000	278,289,000	84,152,000	26,992,000	109,386,000
June 24	3,452,800	3,430,000	272,297,000	81,733,000	30,239,000	111,726,000
July 29	3,539,100	3,460,000	268,513,000	77,887,000	34,900,000	114,053,000
August 5	[1]3,909,400	3,445,000	268,982,000	76,431,000	35,601,000	114,512,000
August 26	[7]1,690,800	3,475,000	246,982,000	73,475,000	37,722,000	116,237,000
September 30	3,658,200	3,560,000	233,023,000	71,168,000	38,081,000	115,466,000
October 7	3,435,850	3,505,000	231,564,000	[6]71,152,000	38,549,000	114,397,000
October 21	3,771,550	[1]3,650,000	[3]229,127,000	72,122,000	39,358,000	115,060,000
October 28	3,498,500	3,520,000	230,453,000	72,660,000	39,562,000	114,786,000
November 25	3,818,100	3,510,000	231,811,000	75,595,000	38,527,000	112,106,000
December 30	3,545,000	3,445,000	237,742,000	80,985,000	34,184,000	106,680,000
1940:						
January 6	3,584,450	3,370,000	238,581,000	82,002,000	32,183,000	105,247,000
January 13	3,592,200	3,520,000	238,249,000	84,326,000	30,326,000	104,712,000
January 20	3,637,450	3,510,000	237,571,000	85,180,000	28,888,000	104,582,000
January 27	3,611,600	3,470,000	237,339,000	87,914,000	27,407,000	103,015,000
February 3, 1940	3,498,800	3,395,000	.....	89,337,000	26,861,000	102,536,000
February 4, 1939	3,441,950	[8]3,134,000	[4]271,763,000	80,089,000	31,931,000	115,713,000
Change in past year	+1.6%	+8.3%	—12.7%	+11.5%	—15.9%	—11.4%

[1] All time peak. [2] Peak for 1939. [3] Lowest since April, 1922. [4] Stocks, January 28, 1939. [5] Peak prior to 1939. [6] Lowest for year. [7] Lowest since October, 1922, due to the shutdown of six Mid-Continent states. [8] January-February, 1939, daily average.

Crude output and runs to stills curtailed

Curtailment of both crude oil production and refinery runs occurred in the latest week for which statistics of the industry are available, and inventories of both light and heavy fuel oils were further reduced. But gasoline production showed an increase, and inasmuch as demand continued seasonally low, there was another large addition to stocks of that product.

Production and Runs

United States crude oil production averaged 3,498,800 barrels daily in the week ended February 3, having come down more than 100,000 barrels from the previous week's rate, as Texas showed a sharp drop under the new proration program. The new production rate of the nation was about 70,000 barrels under average daily market demand for January, as estimated by the Bureau of Mines.

Crude runs to stills were reduced 75,000 barrels, to an average of 3,395,000 barrels daily in the week ended February 3, but they still were 8.3 percent above the daily average runs for January and February of last year.

Gasoline Situation

Production of gasoline did not come down along with crude runs to stills,

CALIFORNIA CRUDE OIL PRICES

Posted effective February 1, 1940. All gravities above those quoted take highest price offered in that field.

Gravity	Wilmington	Signal Hill (Long Beach), El Segundo	Seal Beach	Huntington Beach	Inglewood	Playa del Rey	Olinda, Brea, Canon	Torrance	Richfield	Whittier, East Coyote (La Habra)	Montebello	West Coyote Hills	Santa Fe Springs	Newhall, McKittrick, Kern River, Round Mountain, Kern Front	Greeley, Canal	Coles Levee, Richfield Western	Mountain View	Elk Hills, Buena Vista Hills, Midway-Sunset, Lakeview Area	Lost Hills	Coalinga	Wheeler Ridge
14-14.9	$0.60	$0.65	$0.64	$0.63	$0.64	$0.65	$0.61	$0.65	$0.61	$0.61	$0.62	$0.63	.....	$0.60	.....	.....	.....	$0.60	$0.60	$0.60	.....
15-15.9	.60	.65	.64	.63	.64	.65	.61	.65	.61	.61	.62	.63	.....	.60	.....	.....	.....	.60	.60	.60	.....
16-16.9	.60	.65	.64	.63	.64	.65	.61	.65	.61	.61	.62	.63	.....	.60	.....	.....	.....	.60	.60	.60	.....
17-17.9	.62	.65	.64	.63	.68	.65	.61	.65	.61	.61	.62	.63	.....	.60	.....	.....	.....	.60	.60	.60	.....
18-18.9	.64	.65	.64	.63	.71	.65	.65	.68	.61	.61	.62	.63	.....	.60	.....	.....	.....	.60	.60	.60	.....
19-19.9	.69	.69	.64	.67	.75	.70	.69	.72	.61	.65	.62	.63	.....	.60	.....	.....	$0.60	.64	.64	.61	$0.60
20-20.9	.73	.73	.64	.72	.79	.76	.74	.75	.65	.69	.62	.67	.....	Athens-Rosecrans	.....	.....	.60	.69	.69	.62	.60
21-21.9	.78	.78	.64	.76	.82	.81	.78	.79	.69	.73	.62	.72	$0.63		.....	.....	.64	.74	.74	.66	.60
22-22.9	.82	.82	.69	.81	.86	.86	.82	.82	.73	.77	.66	.76	.63		.....	.....	.68	.79	.78	.70	.63
23-23.9	.86	.86	.75	.85	.89	.92	.86	.86	.78	.82	.71	.81	.67	$0.71	.....	.....	.71	.84	.82	.74	.67
24-24.9	.90	.90	.80	.90	.93	.97	.90	.89	.82	.86	.75	.85	.72	.77	.....	.....	.75	.89	.86	.78	.71
25-25.9	.95	.95	.86	.94	.96	1.02	.95	.93	.86	.90	.80	.89	.77	.82	.....	.....	.79	.94	.90	.82	.75
26-26.9	.99	.99	.91	.99	1.00	1.08	.99	.96	.90	.94	.84	.94	.82	.88	.....	.....	.83	.99	.95	.....	.....
27-27.9	1.03	1.03	.97	1.03	1.04	F.O.B.	1.03	1.00	.94	.98	.89	.98	.87	.94	$0.83	$0.92	.87	1.04	.99	El-	.....
28-28.9	1.07	1.07	1.02	1.07	1.07	Pipe Line	1.07	1.03	.98	.....	.93	1.02	.91	.99	.86	.96	.91	1.09	1.03	wood Ter-	.....
29-29.9	1.10	1.10	1.07	1.11	1.10	.....	1.10	1.06	1.02	Kettle-	.98	1.06	.96	1.04	.90	.99	.95	1.14	1.07	race	.....
30-30.9	1.14	1.14	1.12	1.15	1.14	.....	1.14	1.09	.....	man	1.02	1.10	1.01	1.09	.94	1.02	.99	1.19	1.11	F.O.B.	.....
31-31.9					1.17	.....	1.17		.....	Hills	1.07	1.14	1.05	1.14	.98	1.06	1.02	1.24	.....	Ship	.....
32-32.9	.....	.....	.....	.....	1.20	.....	1.20	.....	.....		1.11	1.18	1.09	1.19	1.02	1.09	1.06	1.29	.....		.....
33-33.9	.....	.....	.....	.....	.....	.....	.....	.....	.....	$1.12	1.15	1.22	1.14	1.24	1.06	1.13	1.10	1.34	.....	$1.21	.....
34-34.9	.....	.....	.....	.....	.....	.....	.....	.....	.....	1.17	1.20	1.26	1.19	1.29	1.10	1.16	1.14	.....	.....	1.25	.....
35-35.9	.....	.....	.....	.....	.....	.....	.....	.....	.....	1.21	1.24		1.23	1.34	1.14	1.20		.....	.....	1.29	.....
36-36.9	.....	.....	.....	.....	.....	.....	.....	.....	.....	1.25	1.28	.....	1.27	1.39	1.18	1.23		.....	.....	1.33	.....
37-37.9	.....	.....	.....	.....	.....	.....	.....	.....	.....	1.29	1.33	.....	1.31	1.44	1.22	1.26		.....	.....	1.37	.....
38-38.9	.....	.....	.....	.....	.....	.....	.....	.....	.....	1.33	1.37	.....	1.36	1.49	1.25	1.30		.....	.....	.....	.....
39-39.9	.....	.....	.....	.....	.....	.....	.....	.....	.....	1.38	1.42	.....	.....	1.54	1.29	1.34		.....	.....	.....	.....
40-40.9	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	1.46	.....	.....	1.59	1.33	1.37		.....	.....	.....	.....
41-41.9	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	1.50	.....	.....	.....	1.37	1.40		.....	.....	.....	.....
42-42.9	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	1.54	.....	.....	.....	1.41	1.44		.....	.....	.....	.....
43-43.9	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	1.59	.....	.....	.....	1.45	1.47		.....	.....	.....	.....
44-44.9	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	1.63	.....	.....	.....	1.49	1.51		.....	.....	.....	.....
45-45.9	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	1.67	.....	.....	.....	1.53	1.54		.....	.....	.....	.....
46-46.9	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	1.71	.....	.....	.....	1.57	1.57		.....	.....	.....	.....
47-47.9	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	1.61	.....		.....	.....	.....	.....
48-48.9	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	1.64	.....		.....	.....	.....	.....

having been 46,000 barrels greater than in the previous seven days, or about 6000 barrels a day larger. The output was 54,000 barrels a day greater than the average for January and February last year.

With demand for gasoline continuing seasonally low, stocks of that product continued to increase, having risen 1,423,000 barrels in the week of February 3. They then stood at 89,337,000 barrels and were only about 4,000,000 barrels under the all time peak of mid-March, 1938. The stocks were 11.5 percent greater than the supply of 80,089,000 barrels on hand February 4, 1939.

Inventories of gas oil and distillate fuel came down over one half million barrels further, to the level of 26,861,000 barrels, in the week ended February 3, as cold weather continued to cause large consumption for heating purposes. The stocks are 15.9 percent lower now than a year ago, although demand is up a similar percentage.

Storage of residual fuel oil also was reduced about a half million barrels, having come down to 102,536,000 barrels, where it was 11.4 percent lower than a year before. Demand for the heavy oil has continued large, as industrial production has remained brisk, the current market requirements being around 10 percent larger than those of a year ago.

Crude oil stocks in the United States again were reduced somewhat in the week ended January 27, having come down from 237,571,000 to 237,339,000 barrels. At the latter level, the inventory was 12.7 percent smaller than one year before.

Bureau reports output at high rate during December

Production of crude oil in the United States in 1939 reached a total of 1,264,256,000, compared with 1,214,355,000 barrels in 1938, but total demand for all oils reached the high figure of 1,417,051,000 barrels, 7 percent above the preceding year, it was reported February 8 by the Bureau of Mines.

The gain over 1938, the bureau explained, was accounted for by the 50,000,000-barrel increase in crude production and a larger decrease in stocks of all oils by 30-odd million barrels. Refinable stocks of crude oil on December 31 totaled 238,910,000 barrels, a reduction for the year of about 36,000,000 barrels, compared with a decrease of about 31,000,000 barrels in 1938.

Crude production continued at a high level during December, although the daily average of 3,703,500 barrels was about 25,000 barrels below the 3,730,000-barrel record of November. The December figure, however, fell just 1000 barrels short of exceeding by 400,000 barrels the 3,305,000-barrel average for the same month in 1938.

Total production for the month was 114,810,000 barrels, compared with 111,887,000 barrels in November and 102,447,000 barrels in December, 1938, the bureau announced.

The report showed that while Texas, California and Oklahoma showed little change in daily output in December, most of the other states registered declines, Kansas dropping from 188,400 barrels daily in November to 175,700 barrels. After two months of decline, the Illinois average increased but failed to match the 348,100-barrel peak of last September. Total output in that state for the year jumped about 70,000,000 barrels, from 24,075,000 barrels in 1938 to 94,303,000 barrels, indicating the total output of all other states for the year was under that of 1938.

Gasoline Yield Percentage Down

Finally succumbing to the influence of the seasonal demand in heating oils, the yield of gasoline declined from the record of 45.8 percent in November to 45 percent in the final month of the year, while the yield of gas oil and distillates increased from 13.1 to 13.6 percent in the same period. Daily average crude runs to stills declined materially in December, but the year's total of 1,237,840,000 barrels was 6 percent above 1938.

"The domestic demand for motor fuel in December met expectations but exports continued to run well under estimates," the bureau commented. "The domestic demand for December, 1939, was 43,694,000 barrels, for the year 552,557,000 barrels, gains of 5 and 6 percent, respectively, over the same periods the preceding year. Exports of motor fuel in December were only 3,136,000 barrels and the annual total (44,559,000) was 11 percent below 1938. Despite the satisfactory overall demand situation, stocks of gasoline continued to rise much more rapidly than in 1938. The increase in finished stocks in December was 5,682,000 barrels; the

total for December 31, 1939, was 77,301,000 barrels (exclusive of 5,564,000 of unfinished gasoline), compared with 65,949,000 barrels December 31, 1938.

"The demand for the fuel oils, including kerosene, did not come up to expectations, probably due to the generally warm weather in December."

Figures of the Bureau of Labor Statistics placed the price index for petroleum products in December at 52.5, compared with 53.9 in November and 50.9 in December, 1938. The crude oil capacity represented in the report was 4,208,000 barrels, giving an operating ratio of 81 percent, compared with 83 percent in November and 77 percent in December, 1938.

Details of supply and demand for the month, in thousands of barrels, were as follows:

New Supply:

Domestic Production—	
Crude	114,810
Daily Average	3,704
Natural Gasoline	4,470
Benzol	275
Total Production	119,555
Daily Average	3,857
Imports—	
Crude in Bond	229
For Domestic Use	2,099
Refined in Bond	799
Refined for Domestic Use	958
Total New Supply	123,640
Daily Average	3,988
Increase in Stocks, All Oils	1,225

Demand:

Total	122,415
Daily Average	3,949
Exports, Crude	4,656
Exports, Refined	8,557

Domestic Demand:

Motor Fuel	43,694
Kerosene	6,613
Gas Oil, Distillate	16,280
Residual Fuel Oils	30,722
Lubricants	1,825
Wax	157
Coke	618
Asphalt	1,414
Road Oil	71
Still Gas	5,761
Miscellaneous	206
Losses	1,841
Total Domestic Demand	109,202
Daily Average	3,523

Stocks:

Refinable, in United States	238,910
Heavy, in California	13,330
Natural Gasoline	4,421
Refined Products	256,249
Total, All Oils	512,910
Days' Supply	130

Supreme Court to hear New York sales tax suit

The United States Supereme Court last week agreed to review a New York Court of Appeals ruling holding unconstitutional a 2 percent sales tax levied by New York City on sales of fuel oil imported from Venezuela and sold for use on outgoing European liners.

The action was brought by Gulf Oil Corporation on the contention that the tax unconstitutionally burdened foreign commerce and constituted a prohibited duty on imports and exports. The New York Court of Appeals held for the company, and the appeal was taken by the city.

Natural gasoline production drops 2.8 percent in 1939

Natural gasoline production for 1939 failed by 2.8 percent to meet the figure set in 1938, totaling 2,095,632 gallons against 2,156,574,000 gallons, it was reported February 8 by the United States Bureau of Mines.

Total production for December was 187,740,000 gallons compared with 184,296,000 gallons in November, but the daily average was lower, 6,056,000 gallons against 6,143,000 gallons, the bureau said. The principal decreases in daily average occurred in the Panhandle, East Texas and Louisiana districts.

Stocks continued to decline in December, and at the end of the year were 17,178,000 gallons less than on December 31, 1938. Stocks at plants and terminals increased from 105,126,000 to 109,116,000 gallons during the month, but those at refineries dropped from 87,192,000 to 76,566,000 gallons.

East Peters operators ask 10-acre spacing

Operators in the East Peters field, Duval County, requested 10-acre spacing at a hearing before the Texas Railroad Commission last week. G. G. Mortimer, operator in the field, testified that one well would drain 10 acres, adding that his first well was completed on January 15 at 2450 feet and is producing from 15 feet of sand. Initial potential was 140 barrels daily of 23-gravity Mirando crude. The Argo sand is the producing horizon. It is about 100 feet above the Government Wells sand.

United States Crude Oil Production

Estimates Compiled by THE OIL WEEKLY

STATE OR DISTRICT	Bureau of Mines Estimate of Daily Demand (Feb.)	State Allowable in Feb.	BARRELS DAILY FOR WEEK ENDED Feb. 10	Feb. 3
TEXAS—				
Texas Panhandle			82,750	69,900
North Texas			82,500	83,850
West Central Texas			33,050	30,300
West Texas			247,900	201,300
East Central Texas			88,250	63,400
East Texas Field			404,500	394,200
South Texas			214,100	196,850
Texas Gulf Coast			239,400	202,850
Total Texas	1,371,400	1,390,150	1,392,450	1,242,650
CALIFORNIA—				
Long Beach			45,500	46,100
Midway-Sunset			59,400	44,700
Kettleman Hills			46,900	47,300
Wilmington			83,300	83,200
Others			387,900	370,200
Total California	585,900	594,000*	623,000	591,500
OKLAHOMA—				
Oklahoma City			100,900	87,600
Seminole Area			109,500	92,510
Others			219,700	227,760
Total Oklahoma	429,000	429,000	430,100	407,870
ILLINOIS—				
Salem			237,500	205,100
Louden			72,875	71,750
Other New Pools			67,175	65,100
Old Pools			7,950	8,000
Total Illinois	325,500		385,500	349,950

STATE OR DISTRICT	Bureau of Mines Estimate of Daily Demand (Feb.)	State Allowable in Feb.	BARRELS DAILY FOR WEEK ENDED Feb. 10	Feb. 3
LOUISIANA—				
North Louisiana			69,250	69,650
South Louisiana			204,000	203,550
Total Louisiana	252,800	273,250	273,250	273,200
KANSAS	155,500	165,000	174,650	181,600
NEW MEXICO	100,300	113,000	109,500	103,400
EASTERN STATES—				
Pennsylvania Grade			76,750	78,700
Others, Eastern			22,500	23,500
Total Eastern States	108,900		99,250	102,200
MOUNTAIN STATES—				
Wyoming	55,200		62,300	64,500
Montana	15,200		17,000	17,550
Colorado	4,100		3,900	3,700
Total Mountain States	74,500		83,200	85,750
MICHIGAN	64,500	65,000	63,500	64,850
ARKANSAS	60,000	70,000	70,250	70,250
MISSISSIPPI			5,100	4,600
NEBRASKA			0	100
†Total 8 Prorated States	3,019,400	3,099,400	3,136,700	2,935,320
Total United States	3,529,000		3,709,750	3,477,920

*Recommendation of Central Committee of California Oil Producers.
†Texas, California, Oklahoma, Louisiana, Kansas, New Mexico, Arkansas, Michigan.

PIPE LINE NEWS

Seminole field in West Texas to get line outlet

Two crude gathering systems and a trunk line have been authorized for the Seminole field, Gaines County, largest producing area in West Texas relying upon tank trucks for market outlet. Magnolia Pipe Line Company will install a gravity system, consisting of 10 miles of 8- and 10-inch line, and 4-inch laterals to serve the south portion of the field, while Atlantic Pipe Line Company will connect to all wells in the north half, laying 10 miles of 4- and 6-inch gravity lines, with 2-inch laterals. The latter system will make deliveries to the north end of Magnolia Pipe Line Company's 8-inch gravity line at a point near NE NW Section 252, Block G, W. T. Ry. Survey.

A 26-mile 8-inch welded trunk line to handle oil gathered by both systems will be built by Magnolia Pipe Line Company from field booster station site, near center Section 291, mile south of Seminole townsite, thence south to NW NW PSL Section 17, Block A-46, Andrews County, where connection will be made with Atlantic Pipe Line Company's Hobbs-Midland 8-inch carrier. Magnolia Pipe Line Company's share of the Seminole crude runs will be taken into its West Texas-Beaumont system at Midland.

The Seminole projects, which are scheduled to be completed by April 1, will include the erection of 75,000 barrels of tankage. Magnolia Pipe Line Company will build a 55,000-barrel and a 10,000-barrel tank at its Seminole station, while Atlantic Pipe Line Company will set up 2 5000-barrel tanks. The Seminole booster station will be equipped to pump 5000 barrels daily, with provisions made to install larger units when needed. The field has 28 flowing wells, prorated to about 875 barrels daily.

Pipe on ground for line, Corpus Christi to La Rosa

Amsco Pipe Line Company will begin immediate construction of a new 6-inch crude oil carrier from the Port of Corpus Christi to the La Rosa field in Refugio County, also connecting with the East White Point, Taft and Plymouth fields of San Patricio County.

Pipe for the line has been received and work will be started as soon as a permit to lay the line across the Nueces Bay has been granted by the United States War Department.

Contract for construction of the line was given to Petty Construction Company.

Lost motion is eliminated in transferring pipe from river barge to rail cars at Filston, Louisiana, for final delivery by rail. The pipe is for an eight-inch gas line of the Louisiana Nevada Transit Company, from the Cotton Valley field of Webster Parish, Louisiana, to Okay, Howard County, Arkansas, and for a six- and eight-inch telescopic main line branch from Fulton to Hope, Arkansas. It was brought down the Ohio and Mississippi rivers by barge to Filston, from where it is being taken by rail to points along the pipe line right-of-way.

To provide outlet for Stribling, Stephens County

Construction of a 9-mile, 4-inch welded crude line has been authorized by A. A. Horwitz and W. P. Oldom, Wichita Falls operators, to extend from the Stribling pool, northwestern Stephens County, Texas, to The Texas Pipe Line Company's booster station northwest of Breckenridge. The latter company will pay the operators, who have 5 wells on their discovery block, the posted price and a 10 cents a barrel gathering charge until the cost of the line is amortized.

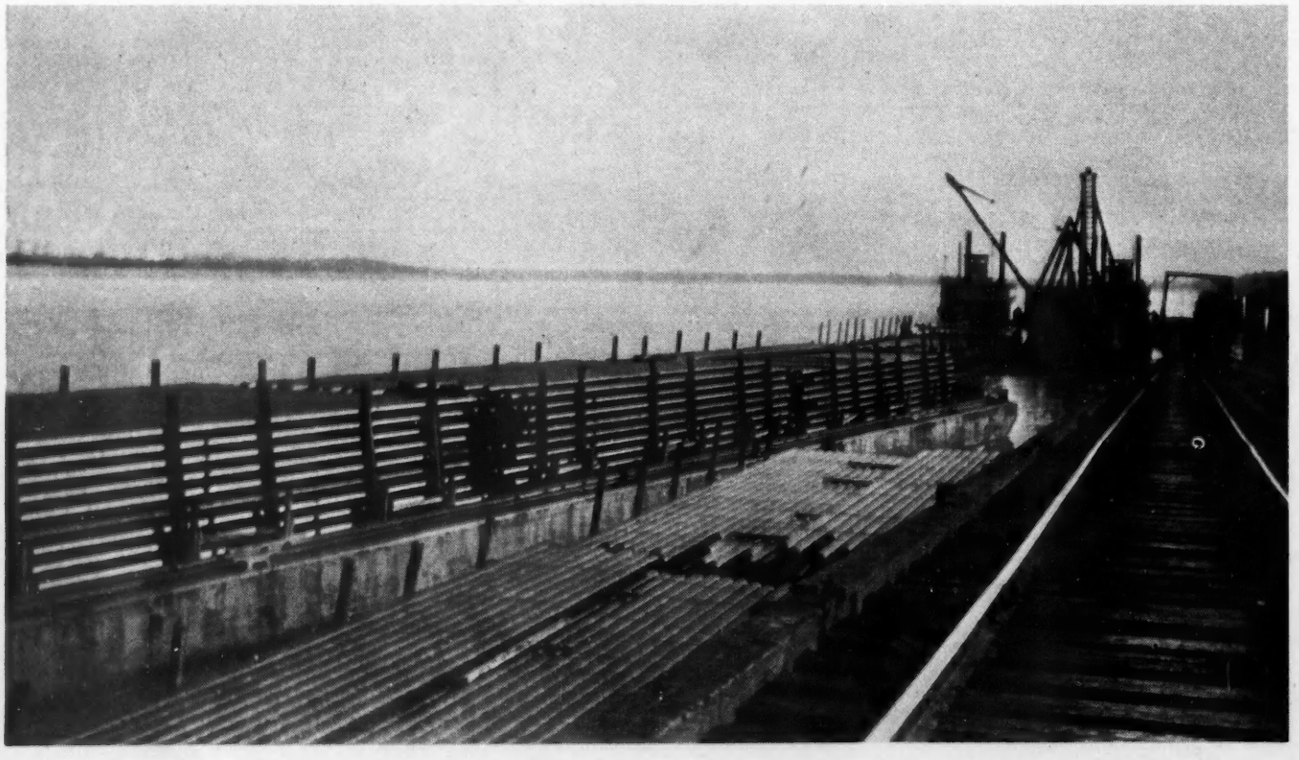
To construct 5000-barrel refinery for Illinois crude

Another outlet for Illinois crude was indicated with announcement last week that Wood River Oil & Refining Company will construct a 5000-barrel plant at Hartford, Illinois. Contract has been let to Koch Engineering Company. Estimated cost of the project, which is to be completed in late summer, is $500,000.

Five oil companies chartered in Texas

Five oil companies were among firms chartered last week to do business in Texas:

Roxie Wright, K. R. Voelkel and Bernice Manry Wright incorporated Wright Drilling Company, Houston; Gordon Rogers, Buck Ray and J. I. Staley, Jr., organized Rogers & Ray Drilling Company, Wichita Falls; J. K. Dorrance, E. J. Nolan and Clarence Lohman chartered Gordon Oil Company, Houston; W. K. Layne, W. E. Daniels, Jr., and Lester B. Clark incorporated Reclamation Production Company of Houston, and E. C. Senter, Jr., E. G. Senter and T. R. Stubblefield incorporated Dallas Petroleum Company, Dallas.



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WORLD-WIDE DEVELOPMENTS

Edited by WM. V. GROSS, Associate Editor

War

England seeks Rumania oil in view of excessive stocks

Because Rumania has been unable to move certain quantities of oil destined for Germany, and as there is a possibility that considerable stocks have accumulated as a result of that condition, England is reported preparing to send an expert to Bucharest to determine whether some of this undeliverable oil can not be made available to the allies.

England's hope for obtaining additional Rumanian oil is based on the fact that normal Rumanian exports, to Germany and other destinations, call for shipment of better than 74 percent of the total by sea. Rumanian exports by sea have practically ceased.

The "Economist," a London organ, points out that since maritime transport presumably is barred for Germany and since that country's railroads already are overburdened, it is taken for granted that the Reich is unable to transport all of the Rumanian crude available for the account of Germany.

Transportation of oil and other petroleum supplies by way of Danube river barges continues to fail to meet the domestic needs of Germany. Such shipments must be carried in vessels carrying less than 600 tons.

A correspondent for the "Observer" writes that Rumania's difficulty has been sympathetically understood by the allies. At the same time, those powers have judged it opportune to point out to Rumania the added danger of fencing with the issue.

Brightening the situation somewhat, from the financier's standpoint, is the notice that oil shares have soared on the Rumanian market in reaction to the continued lively tussle between British and German interests for control of shares, notwithstanding the fact that Rumania's production has dropped 5 percent, or 400,000 tons, in the last 4 months.

However, for the next week or so, the oil industry will have to watch developments of the Balkan entente to determine how long Rumania will be able to stay out of the war and how long it will be before conditions in the valuable Rumanian fields change. While the industry awaits unfolding of these developments, it is known that stocks in Giurgiu, Rumania, total 280,000 tons of oil, while those in Turnu Severinu total 135,000 tons.

As these developments are awaited, possible postponement of Rumania's active participation in hostilities is seen as a result of the statement February 7 of Shukru Saracoglu, Turkey's foreign minister, to the effect that his country, a hitherto potential aid of Germany and Russia, is, after all is said and done, pro-ally in sentiment.

Hissien Jahid Yalcin, member of the Turkish parliament, declared: "Turkey is so convinced that her fate is bound up with that of other Balkan countries that she has associated herself with the guarantees given by Western democracies to Rumania against aggression." He continued with the declaration that Turkey will regard any attack on the frontier of Rumania or any of her neighbors as directed against Turkey itself, and will act accordingly.

The systematic infiltration of Germans into Polish Galicia, recently begun, gives Germans opportunity for exerting further pressure on Rumania as well as the right to exploit oil fields in that vicinity.

Berlin declares shipments coming from Russia

Berlin issued an official report February 8 declaring that both oil and gasoline in sizable quantities were being sent to the Reich by the Russians. The declaration was made in reply to contentions in neutral and anti-Nazi countries that Germany was not receiving assistance from Russia as she had expected following signing of agreements with the Soviet government.

The statement declared deliveries were crossing the German-Soviet frontier at Prostken-Grajewo and at Zurawica, prisoners of war being employed at those border junctions to change oil and gasoline from Russian tank cars to German tank cars. Oil from Russian fields is routed to the German frontier on narrow gauge cars to destination.

At Zurawica-Przemysl, the German authorities claim movement of oil and gasoline at the monthly rate of about 20 trains with a total of 410 tank cars. The dispatch did not say whether the tank cars were of German manufacture or of the smaller type made in the Soviet Union. Assuming the cars average 250 barrels capacity each, the movement eases the German situation by 102,500 barrels per month, an amount which some students of domestic demand in Germany claim is insignificant.

It is doubtful whether Germany immediately will be able to appreciably increase the number of tank cars available for shipment of Russian oil from the frontier to points in the interior, as she has requisitioned all available cars of this type for rail movements from more accessible sources of supply in Rumania. In addition, she has been bidding for acquisition of tank cars from neighboring nations not yet involved in the war, particularly Belgium and Holland.

Those sections of the French and English fighting forces concerned with cutting down as much as possible Germany's supply of petroleum products probably drew considerable satisfaction from the action of Turkey in taking over the Golden Horn works of the Krupp munitions factory on February 8. Due to unsatisfactory rail facilities, it was considered by some that Russian oil might be relayed to Germany via the Mediterranean Sea and Italy. The action does not yet mean Turkey will stop shipments of petroleum products through the narrow gateway, but it may be taken as an indication of which way the wind is blowing.

Canada

Proration cuts Alberta December crude output

Crude oil production in Alberta, Canada, during December, 1939, totaled 485,618 barrels, against 472,774 barrels in the same month of 1938, and 712,179 barrels in November, 1939. The reduction from November was attributed to proration.

However, total Canadian production in 1939 amounted to 7,594,411 barrels, as against 6,742,039 barrels in 1938.

Mexico

Japan seeks Mexican oil on barter-cash basis

Laguna Corporation, part of the Japanese Mitsui interests in Mexico, is reported negotiating with the Mexican government for 7,000,000 barrels of oil on a barter-cash basis.

Intensification of Japanese commercial activity in Mexico has been noted for the past year, presumably, according to some circles, because of an anticipated or potential embargo which might originate in the United States as an outgrowth of the termination of the trade treaty between those two countries.

Signing of a 7,000,000-barrel contract would go a long way toward alleviating Japan's current shortage of petroleum and would, at the same time, help Mexico with respect to stored oil taxing the country's tankage.

Value of Indiana oil and gas gains sharply in 1939

The Indiana Department of Conservation has estimated value of oil and gas produced in the state during 1939 at $3,000,000, more than twice the 1938 estimated production value of $1,300,000.

Wells were drilled in 37 counties during the year, but all but 40 of the 375 wells the department reported completed were outside the southwestern area. Posey and Gibson counties, with the Griffin and New Harmony fields, accounted for 110 wells. Completed wells recorded throughout the state included 175 oil wells, 43 gas wells and 157 dry holes.

U. S. FIELD OPERATIONS

A strike in the Lower Trinity series assured a moderate drilling program for the Chapel Hill deep area of eastern Smith County, East Texas. At 8058 feet, the well flowed 126½ barrels of 43-gravity oil natural in 12 hours through a ¼-inch choke.

A test 2¼ miles northwest of nearest deep production at North Cowden, Ector County, West Texas, bailed free oil, assuring commercial production after usual acid treatment. Pay is second lowest Permian level for the district, at 5158 feet.

A wildcat in eastern Wilbarger County adjacent to the K-M-A field found sufficient saturation in the Ellenberger to warrant setting pipe. An 81-barrel well opened a new Tomoconnor sand oil field in Refugio County, Southwest Texas.

A new deep sand on the west flank of Anse La Butte, St. Martin Parish, South Louisiana, was opened by a well flowing 125 barrels of pipe line oil. It is the second old salt dome to produce oil from a new deep sand this month.

Rapid development of the Devonian lime in the Lake Centralia-Salem field boosted Illinois production in January to an all-time high of 10,825,000 barrels. A 13,000 barrel well broke the state's individual well production record last week.

Michigan's second pool for the year was provided by a 40-barrel well in Muskegon County. Completion was in the Traverse lime at 1865 feet.

Illinois

Devonian completions boost production to all-time high

Centralia, Ill.—Illinois' oil production in January broke all records in the state's 35-year petroleum history, totaling 10,825,000 barrels as against a previous record of 10,601,000 barrels established last October. It was more than double the January, 1939, total of 4,446,000 barrels.

The state's sharp increase in production has been due principally to Devonian completions in the Lake Centralia-Salem field where Illinois' two largest wells were completed a few days ago. Paul Rossi's Brooks 9, SW NE SW 29-2n-2e, flowed 5156 barrels in 12 hours from Devonian lime at 3376-3438 feet to become Illinois' biggest completion. Rossi reported that during this test the well was slightly choked in. John R Mitchell's Fred Lee 5, ¾ mile northeast of Rossi's record breaker, flowed 7380 barrels in 24 hours under a 1-inch choke after 5000 gallons of acid in pay at 3372-3424 feet to establish itself as the state's second largest producer.

Among other of the field's most recent Devonian completions are McBride, Inc.'s Lee 18, NW NE SE 29-2n-2e, flowed 1480 barrels in 6 hours after 6000 gallons of acid, rated at 6028 barrels total depth 3412½ feet; Magnolia Petroleum Company's S. Shanafelt 33, NE NW SE 29-2n-2e, flowed 3500 barrels in 24 hours after acid; Magnolia Petroleum Company's S. Shanafelt 35, SW SE 29-2n-2e, flowed 3636 barrels in 24 hours after acid, total depth 3404 feet; Magnolia Petroleum Company's S. Shanafelt 34 NW SE 29-2n-2e, acidized with 5000 gallons, flowed 6337 barrels in 24 hours, total depth 3419 feet; Magnolia Petroleum Company's S. Shanafelt 36, SE SW 29-2n-2e, acidized with 5000 gallons, flowed 6969 barrels in 24 hourrs, total depth 3415 feet.

A new pool was in sight in Randolph County, which last week was given its first production. The prospective pool opener is H. C. Gass et al's Schulz 1, SW SE NW 2-7s-6w, which will drill plug late this week to a show of oil in the Aux Vases at 710-17 feet. It topped the Palestine at 138 feet, Menard formation at 175 feet, Menard lime at 190 feet, Waltersburg at 265 feet, Vienna at 298 feet, Tar Springs at 310 feet, Glen Dean at 345 feet, Hardinsburg at 413 feet, Golconda at 442 feet, Paint Creek at 573 feet, Paint Creek sand at 630 feet, Bethel at 660 feet, Renault at 675 feet, and Aux Vases at 693 feet. Total depth is 734 feet and elevation is 530 feet. The operators have skidded the derrick 164 feet north of Schulz for a second test on the lease.

A ¾-mile north extension to the Dundas field of Richland County and apparent extension of the same pool ½ mile east were reported by Pure Oil Company's Heap 2, NE NW 30-5n-10e, north outpost, came in flowing 40 barrels an hour from the McClosky. The east outpost, Emma Kropp 1, also a Pure Oil Company holding, SE SE 6-4n-10e, set casing to test promising McClosky pay at 2940 feet. A short distance northwest of the Kropp well, but also east of production, Pure Oil Company's C. H. Snider 1, SE NW 6-4n-10e, found good McClosky pay and was cased to 2915 feet.

In the Centralia townsite field of Clinton and Marion counties, the first test of Rosiclaire lime has been abandoned as dry. It is Androde et al's Meisenheimer 1, Lot 9, Block 1, Pullen Subdivision 3, which tested saturation at 1540-44 feet, but salt water encroachment forced abandonment. Total depth was 1548 feet. Among the 34 Devonian operations in the pool was Max Pray's Storer 1, NE 12-1n-1w, which was acidized in pay at 2908-15 feet with 750 gallons and was flowing 42 barrels an hour, apparently one of the field's best completions. A test 5 blocks east of production and only a short distance southwest of the business district, J. W. Menhall, Inc.'s Illinois Central 10, was drilling at nearly 2500 feet.

In Edgar County, H. C. Hawthorne's Mary E. Hathaway 1, NW SW 17-14n-13w, has cemented 8-inch casing at 832 feet to test 5 feet of Niagaran lime (Devonian) saturation at 845-50 feet. In an area where shallow production has been obtained for years, it is the first test to find favorable shows in the Niagaran. Formation was topped at 843 feet.

A Wayne County wildcat, Lessing Alch's C. E. Dickey 1, SE NE SE NE 3-1n-6e, which cored a light show in 5 feet of McClosky, was waiting on cement.

In Cass County, a wildcat, Cass County Oil Company's Maslin 1, SE SE 2-17n-10w, a Devonian test, found a light show of oil at 385 feet but was drilling deeper below 460 feet.

A wildcat receiving the close attention of major operators is Kingwood Oil Company's Wilson 1, NW NW SE 6-6s-7e, Hamilton County, which was shut down at about 3250 feet following an electric survey, results of which were not revealed.

Wolf Brothers' Seibert 1, NE NE NE 4-1n-13w, prospective Wabash County pool opener, just south of the Lawrence County line. has delayed drilling plug to cure titles. It recovered 13 feet of McClosky between 2688 and 2708 feet of which 10 feet was saturated.

For the week ended February 3 there were 541 operations in the basin, including 51 completions of which 33 were oil wells. Total operations included 175 wildcat and semi-wildcat ventures.

Indiana

Two wildcats set casing for McClosky tests

Evansville, Ind.—As warmer weather stepped-up operations, the Indiana spotlight was focused on two wildcats, both with casing set to the McClosky.

In Gibson County, about 8 miles east of Griffin field production, Harry Fotiades' Perry Fleener 1, NW SE 21-3s-12w, got 1000 feet of oil, and no water, in 25 minutes on a drill-stem test of McClosky saturation at 2707-14 feet. Starting at 468 feet surface elevation, the test topped the Glen Dean at 2105 feet; the Cypress was dry. The test is about 4 miles due east of W. R. Nicholson's Perry Fleener 1, drilled early last year and abandoned with no shows through the McClosky, and about 4 miles north of the Inez Montgomery

1, Posey County, also abandoned through the McClosky. M. L. Bass Drilling Company, Evansville, was contractor for Fleener 1.

Meanwhile, about 4 miles east, in Union Township, Gibson County, south of Owensville, A. L. Braden's George R. Simpson 1, cable tool test in SE NE 19-3s-11w, was underreaming at 2268 feet. At a surface elevation of 538 feet, the wildcat topped the Glen Dean at 1947 feet and will test the McClosky.

Also waiting on cement, with two possible pay-offs in view, was Ray Ryan and Morgan H. Brown's John W. Spencer 1, Point Township, Posey County, CE½ SE SE 26-7s-15w. Casing, set through McClosky saturation, probably also will be perforated in the Benoist.

In the Enterprise pool of Luce Township, Spencer County, Damron Brothers' Oscar Howard 2, NE SE SE 35-7s-7w, was running tubing preparing to put on pump following shot in Cunningham (Aux Vases) sand for the field's fifth small producer.

Griffin Area

In southwestern Griffin field of Gibson County, Continental Oil Company's C. H. Kleiderer 1, SE NE 26-3s-14w, was waiting on cement with casing set to test Aux Vases at 3001 feet. This test also carried a promising saturation in the Waltersburg.

On the eastern side of the Griffin field, just south of Schuh Bend, Continental Oil Company's Floyd Thrash 2, NW 18-3s-13w, was running tubing to put on pump. Bottom was at 2510 feet.

Closely-watched is a wildcat southeast of Griffin, Posey County, which was coring ahead in the Cypress, with about 10 feet of saturation reported topped at 2575 feet. It is J. J. Minton and D. M. Hollingsworth's L. P. Hill 1, SE NW 7-4s-13w.

In eastern Gibson County, northeast of Francisco, Midwest Development Corporation, Vincennes, has made location for Ola Brock 1, SW SW SE 10-2s-9w, an attempted northeast extension of the new Francisco field.

In Sullivan County, Haddon Township, location has been made for the Pearl Poole's Shepherd Heirs 1, SE NE 13-6n-10w.

Kentucky

Henderson County test nearing McClosky lime

Owensboro, Ky.—In the Corydon section of Henderson County, Sun Oil Company's Corydon Unit 3 (Sudie Mason), Section 18-P-22, 3 miles north of Corydon, was drilling at 1675 feet for a McClosky test.

On the west side of the Utica field, Daviess County, location has been made for Stewart & Snyder's Hansford 4, between No. 1 and No. 2 and on the same lease of the recently-completed 200-barrel No. 3.

Three fourths mile northwest of Handyville, in the Utica field, Walter Sargeant's S. A. Burns 1 was still tied up with a fishing job at 1263 feet. Total depth was 1601 feet. Completed for a small producer in the Jett sand was Stewart and Snyder's A. A. Westerfield 4.

Oklahoma

South extension for West Seminole; Byars has fourth

Tulsa.—Patsy Oil Company's Richardson 1, SE SW SE 9-5n-3e, was completed for the fourth producer for Byars pool, McClain County, with a potential of 1752 barrels daily from Viola lime at 3577-3602 feet. Seven-inch casing was cemented at 3503 feet.

West Seminole pool was extended southward as Chess Martin's Earls 1, NE SE NW 33-9n-6e, pumped 65 barrels of crude in 24 hours. Hole was bottomed at 2576 feet.

Pure Oil Company had its first show at Little 1, C W½ NE SE 28-5s-7e, north of Cumberland, Marshall County. On a drill-stem test with packer set at 3631 feet, an estimated 500,000 cubic feet of gas was reported. The test was deepening, however, below 3750 feet. Johnson & Kemmitz Drilling Company et al's Nelf-Godfrey 1, SW SE NE 14-6s-6e, near Madill, will resume drilling after being shut down at 4455 feet. Plans call for an Arbuckle lime test when weather permits.

Sinclair Prairie Oil Company's German 1, SW NW NW 1-6n-13w, southeast of Carnegie, Caddo County, recovered 180 feet of mud on a 1-hour-and-20-minute drill-stem test with packer set at 9150 feet. Total depth was 9294 feet in Wilcox sand. It was deepening. Continental Oil Company was digging a water well in preparation to drill State 1, C NE 16-8n-16w, a wildcat venture southeast of Cordell, Washita County. Location is on a 22,463-acre block and a depth of 10,000 feet is expected.

Jackson County Wildcat

Six miles north of Altus pool, Jackson County, English Drilling Company's Aetna Life 1-A, SEc NE 26-3n-20w, topped Arbuckle lime at 1585 feet, carried 6⅝-inch casing to 1590 feet, and was drilling below 1650 feet.

Free oil was in the hole at Malernee Oil Company's Harris 1, C SW NE 14-25n-1e, west of Ponca City pool, Kay County. Plugs were drilled at 3743 to 3784 feet.

Burke-Greis Oil Corporation et al's Dew 1, NEc 9-12n-9e, 1½ miles south of Mason, Okfuskee County, was a new wildcat start. East of Spaulding area, Hughes County, Miller et al's Cahill 1, C E½ NE SW 2-6n-8e, was spudding. Acme Drilling Company staked location for Reynolds 1, NEc SW 22-11n-14e, southeast of Kusa gas pool, McIntosh County.

Water in Wilcox

South of Edna pool, Creek County, Waite Drilling Company's Garrett 1, NEc 25-14n-10e, had water in first Wilcox sand at 3160-75 feet but may test a show of gas in Viola lime at 3118 feet before abandoning. Midco Oil Corporation's Bruner 1, CNL NW SW 29-17n-11e, a wildcat in the Sapulpa area, Creek County, gauged 2,000,000 cubic feet of gas at 2167 feet, but was deepening.

C & R Drilling Company et al's Galbreath 1, NW NE NW 11-22n-4e, 4 miles south of Masham pool, Pawnee County, was a failure in Mississippi lime at 3516-20 feet and was shut down for orders.

Hobart pool, Kiowa County, reported its sixth oiler at Shell Oil Company's Ratliff 2, SW SE NE 19-7n-17w. In 4 hours it gauged 181 barrels from lime formation. The best zone was encountered at 1124 feet, with hole carried to 1128 feet. The company immediately staked location for Hutchens 1, NE NW SE 19-7n-17w, a west offset to Phillips Petroleum Company's Warner 2 and the farthest test to the west.

Forest City Basin

Report free oil bailed at Richardson County wildcat

St. Joseph, Mo. — Pawnee Royalty Company's Meyer 1, C NW NW 24-1n-15e, Richardson County, 2 miles southeast of the Forest City Basin discovery, was reported bailing free oil at 3193 feet in Viola lime topped at 3183 feet. Little information has been given out on the wildcat, which may prove the second pool opener for the state.

Basin activity has temporarily shifted to Nebraska and Northeastern Kansas. Weather and water conditions halted pumping at Pawnee Royalty Company's Boice 1, C NE NE 18-1n-16e, Richardson County, which was previously making approximately 100 barrels of crude daily with lots of water. During the cold spell, water was disposed of by pumping it to low spots surrounding the well, where it froze. After thawing, operators have a problem on their hands, not knowing how to properly dispose of the waste water.

E. V. Jackson et al staked Hill 1, C NW SW 32-2n-16e, Richardson County, north of Falls City and northeast of the discovery well.

In Morrill County, Neb., Nebraska Oil Company's Bonnerland 1, SEc 10-23n-49w, near Bonner, a wildcat heretofore unreported, was drilling below 1200 feet.

In Northeastern Kansas, G. C. Helm will drill a deep test at Julian 1, NEc 9-11n-19e, north of Williamstown, Jefferson County. E. W. Mosbacker et al's McLaughlin 1, SW NE NW 4-10-20e, north of McLouth, was underreaming to increase the size of hole at 1915 feet in Hunton lime. A long fishing job delayed action on this Jefferson County wildcat. It earlier showed for 6,500,000 cubic feet of gas at 1430½ fee in Bartlesville sand. Six-inch casing has been cemented at 1915 feet.

Phillips Petroleum Company's Creston 1, C SE NE 31-71n-30w, Union County, Iowa, has a fishing job at 1780 feet in what is believed Hunton lime. Pennsylvanian was topped at 305 feet and Mississippian at 1177 feet.

T. E. Baldwin's Johnson 1-A, NW NE NE 21-65n-15w, Schuyler County, cemented 6-inch casing at 1069 feet and was waiting.

Consider new allowable for Mission River field

The Texas Railroad Commission has scheduled a hearing for February 20, at Austin, on an application for an increased allowable for the Mission River field, Refugio County.

Magnetic Method of Orientation

(U.S. Patent 2,120,670 and others pending)

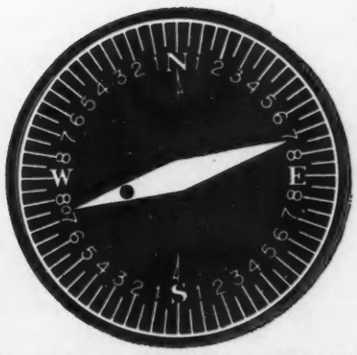
A Fast, Accurate, Self-Checking Method for Orienting Deflecting Tools . . . .

This new method developed by Sperry-Sun assures the correct orientation of deflecting tools at the bottom of the hole.

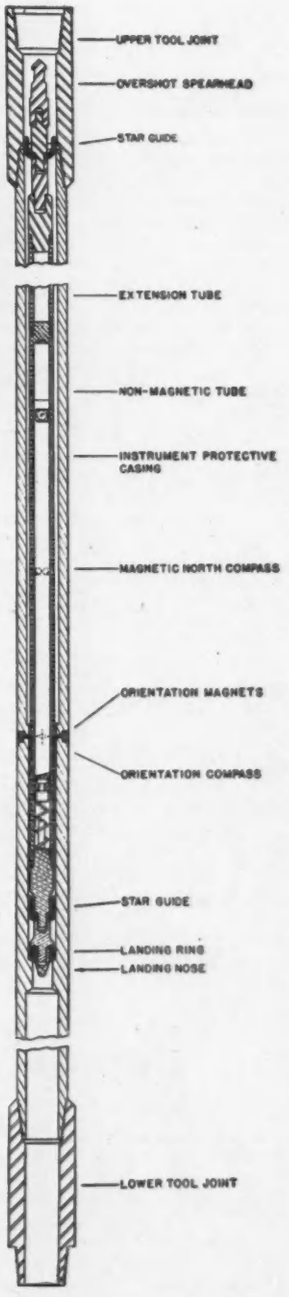
A sub containing two small magnets and provisions for seating a Directional Magnetic Single Shot Instrument with one Compass directly opposite the magnets, is arranged in the drill string immediately above the tool to be oriented. The relative azimuthal angle between the magnets and the direction of the tool face is measured prior to lowering the drill string in the same manner as an ordinary bit into the hole. After the tool has reached bottom, a record is taken with a Single Shot Instrument in which a second compass has been temporarily interchanged for the inclination unit. This record indicates the magnetic North and also the position of the deflecting tool in the hole, since the compass located opposite the magnets is attracted by them. The tool is then rotated to bring it into the correct position, and another single shot record is made to check on the final position of the deflecting tool.

This method has been successfully used in the field for over a year. It is *accurate to within one-half of a degree* (½°). *It is speedy*, as no drill stem orientation is required, *and the operation is done by one man on the derrick floor. A photographic check record is obtained* of the position of the tool prior to starting deflected drilling.

For LICENSES under the above patent, apply directly to the Philadelphia Office.



Sample record (showing magnetic North, as well as direction of deflecting tool section of needle with round circle indicating direction of tool).



Non-Magnetic Sub

SPERRY-SUN WELL SURVEYING CO., 1608 WALNUT ST., PHILA., PA.

Kansas

New pools opened in Barton and Cowley counties

Wichita.—Kansas added two new pools last week. Crown Petroleum Corporation's Ernsting 1, CWL N E SE 1-20-12w, ¾ mile southeast of Wolf pool, Barton County, established a potential of 191 barrels per day. It has been named Ernsting pool.

C. L. Brosius and Jock Garden's Rahn 1, SWc NW 13-34-5e, 6½ miles southwest of Wilson pool, Cowley County, flowed 500 barrels in 20 hours through a tubing choke, and later increased to 1035 barrels daily. Pay is Bartlesville sand at 2910-50 feet. The new area has been designated Rahn pool. B. B. Blair and Tulsa Oil Corporation's Scott 1, SWc 12-34-5e, ½ mile north of this producer, was dry in the Bartlesville sand and was drilling below 3000 feet in Mississippi lime with nothing showing. Three offsets to the pool opener have been staked: Rahn 2, NWc SW 13-34-5e; Waldschmidt 1, S½ NE 14-34-5e, and G. Rahn 1, N½ SW 13-34-5e.

Iowa-Kansas Oil Company's Beardmore 1, C E½ SE NE 10-9-16w, extended Laton pool, Rooks County, ½ mile northwest. It was pumping 5 barrels per day from Topeka lime at 3100 feet.

Four miles north of Lost Springs pool in Marion County, Mendenhall et al's Hayes 1, SE SW SW 23-16-4e, was a wildcat start in Dickinson County. G. V. Helms et al's Julian 1, NEc 9-11-19e, 4 miles north of Williamstown, Jefferson County, will drill for production in the Forest City Basin area of Northeastern Kansas. McLaughlin Sons, Inc. were underreaming McLaughlin 1, SW NE NW 4-10-20e, at 1915 feet in Hunton lime.

Extend Otis-Albert

Aylward, Vernon Oil & Gas Company et al's Bird 1, C SE NW 33-18-15w, extended production in the Otis-Albert area, Barton County, flowing 67 barrels in 24 hours. Basal sand was drilled to 3510 feet but is scheduled to be shot before final completion. Northeast of Otis area 1½ miles Triangle Drilling Company et al's Schneider 1, a Barton County wildcat, was abandoned at 3598 feet. Derby Oil Company completed its second producer in the Arkansas River bed, Ellinwood pool, at State 3, SEc 10-20-11w. On initial test, 18 to 20 barrels per hour on the swab was reported. The new producer is bottomed at 3288½ feet in Arbuckle lime. State 4, SE SW 10-20-11w, was drilling below 2000 feet while pits are being completed at State 5, NEc 14-20-11w.

Lario Oil and Gas Company has staked location for Morrison 1, C S½ SW NE 32-10-17w, a mile north of Burnett pool, Rooks County.

Gulf Oil Corporation set surface pipe at Redetzke 1, SEc NE 19-16-11w, ¾ mile from Prusa pool, Barton County. In Krier pool, this company was moving in tools at Joseph 1, NWc SW 29-16-11w. Lauck & Moncrief staked Breford 1, CWL SWc 35-16-10w, 1½ miles southeast of Stoltenberg pool, Ellsworth County. Simpson Oil Company's Kruse 1, CEL NE NW 20-17-9w, ½ mile from Schroeder pool, was moving in materials.

Cities Service Oil Company set surface pipe to 100 feet at Victory 1, CSL SW NW NW 36-13-30w, Gove County. Marylyn Oil Company was moving in tools to deepen Burke 1, NEc SW 27-24-11e, east of Wiggins pool, Greenwood County.

C. W. Thrall and Hannum Drilling Company staked location for McComb 1, CSL SE NE 22-24-11w, ½ mile west of Zenith pool, Stafford County. Deep Rock Oil Corporation was drilling below 1000 feet at Turner 2, C S½ SE SW 2-24-11w, north extension area of the pool. Sunray Oil Company has started operations at McMillen 1, C W½ NWc 14-29-2w, Sedgwick County. This wildcat is northeast of Latta pool in Sumner County.

The following pools in Kansas have been consolidated: Hodge pool, Rice County, has been combined with Bornholdt pool, Rice and McPherson counties; Orth East with Orth pool, Rice County; Balta and Letsch South joined with Hall pool, Russell County. Coal Creek pool, Barton County, has been renamed Feltes pool.

With production falling off, four pools have been dropped from the prorated list and classed as minimum pools, enabling them to produce at capacity. They are Bow Creek, Phillips County; Nyra, Rooks County; Hittle (Misener sand), Cowley County, and Hillsboro, Marion County.

Kansas completes 26 tests; starts 29 new operations

Kansas completed 20 oil wells the past week for a total potential of 28,149 barrels. Six tests were abandoned as failures.

Twenty-nine stakes were driven during the past 7 days. Ellis and Russell counties led with 5 each, followed by Ellsworth and Greenwood with 4 each, Rice with 3, Barton with 2, and Butler, Dickinson, Rooks, Rush, Sedgwick and Stafford counties with 1 each.

North Texas

Wilbarger County Ellenberger wildcat encounters saturation

Wichita Falls.—Renewed efforts to develop production from the Ellenberger within and adjacent to the K-M-A field have shifted interest to southeastern Wilbarger County where a wildcat encountered sufficient oil saturation to warrant running pipe. Consolidated Oil Company et al's Waggoner Estate 1-FF, SW SW NE H&TC Section 25, Block 6, 1 mile northwest of the Consolidated pool, moved in spudder to drill plugs from 5½-inch pipe at 4485 feet to test show oil at 4510-16 feet. Top of Ellenberger was called at 4470 feet, being 85 feet higher structurally on this marker than King Oil Company's Waggoner 1-U, located 2 miles west. The latter showed oil, gas and water in Ellenberger, and abandoned at 4622 feet.

Production test was due late last week for Bert Ligon et al's Collins 2, J. T. Tyler Survey, Wichita County wildcat and 4 miles west of Wichita Falls, using spudder to drill plugs from 7-inch pipe at 4280 feet. The hole is bottomed in oil sand at 4290 feet, and samples registered better porosity and saturation than found in a previous test on this tract.

Expansion of the Hull-Silk field, Archer County, to the southeast hinges on the outcome of the two tests that have experienced difficulty in developing flowing production. L. T. Burns et al's White 97, Lot 9, Section 34, tested 3500 feet of fluid after 80-quart nitro shot at 4404-24 feet, and is to perforate casing opposite oil saturation in the Upper Strawn at 3887-3926 feet. Bert Ligon et al's White 1-D, SWc Section 40, drilled to 4445 feet, logging nominal oil saturation in the upper and lower zones, and has experienced difficulty in cementing 5-inch pipe at 4185 feet for a production test.

In eastern Baylor County, Staton & Bunch's Robertson 1 halted operations at 3535 feet, with no shows recorded below 3180 feet. Hall-Jordan Oil Company's Blackman 1, northeastern Baylor County wildcat, was drilling at 4720 feet, and will likely continue to the Ellenberger.

Walter Gant and Continental Oil Company's Brown 1, western Montague County wildcat, was without oil or gas shows in bailing the hole for a test of the Ellenberger at 7288-7341 feet. Four feet of new hole made last week before landing liner on bottom credited the test with being in hard lime with oil odor. Sinclair Prairie Oil Company's Howard 1, west edge of Bonita townsite, logged top of lime at 5151 feet, tentatively identified as the Bend, and was drilling at 5170 feet. No shows have been recorded. Omohundro et al's Seay 1, 3½ miles south of Ringgold, was drilling shale at 4900 feet, and Walter K. Jones et al's Johnson 1, 4 miles southeast of Montague, was drilling at 2560 feet.

Texas commission doubles allowable for Kubela field

A revised schedule for the Kubela field, Wharton County, issued by the Texas Railroad Commission last week provides an allowable of 1118 barrels, effective February 3. The original schedule, effective on February 1, provided an allowable of 526 barrels. The commission has since held an emergency hearing on the field at which Lisle Steel and other operators asked for an increase.

East Texas

Oil strike at Chapel Hill starts moderate drilling campaign

Tyler, Texas.—A moderate drilling program for the Chapel Hill deep area, eastern Smith County, is to follow discovery of oil production in the Pettit member of the lower trinity series. Shell Oil Company's Henry Campbell 1, northwest corner of 74-acre tract and Phillip Lively Survey, flowed 126½ barrels of 43-gravity oil natural in 12 hours through ¼-inch choke February 6-7 after cleaning itself of drilling fluid, with gas/oil ratio of 560 to 1. Production followed the perforation of 5½-inch casing with 40 shots at 8058-68 feet after plugging off the Travis Peak, logged at 8247-8600 feet. On the above gauge, working pressures dropped to 300 pounds on tubing and 900 pounds on casing. Seven-hour gauge February 8 through ¼-inch choke yielded 66 barrels of oil with further drop in pressure noted. The subnormal pressure is attributed to the small volume of gas, which likely will be augmented by perforating at a higher level in the porous section of the Pettit, logged at 8037-63 feet.

Chapel Hill has been rated as an important Trinity prospect since competion of Hunt Oil Company's Bradley 1, T. P. Payne Survey, 2 miles southwest of the above oil well, as a prolific gas-distillate well July, 1938, through partially junked hole in lower Glen Rose at 7528 feet. The discovery is producing in excess of 8000 barrels of distillate monthly in supplying gas for lease operation in the East Texas field. It is 8 miles west of nearest production in northwestern Rusk County section of the big field. Bradley 1 occupies a high point on the deep seated structure, and missed gas-distillate production found in the Paluxy sand at 5749-5821 feet by Campbell 1 because the sand beds were absent. This Paluxy gas-distillate zone appears to register to the best advantage downdip on structure, as Sun Oil Company's Huddle 1, Wm. Dickinson Survey, 2 miles south of the pool discovery, indicated a producer, based upon samples and electric log, at 5702-23 feet. The latter was drilling at 7130 feet, having logged top of Massive Anhydrite at 7059 feet, and will fulfill 8200-foot contract unless oil production is found in the Lower Glen Rose or Pettit. On the latter marker it was 65 feet higher than the oil well and 90 feet lower than the gas-distillate producer.

The Chapel Hill multiple-pay zones likely will embrace a minimum of 8000 acres, while the producing area may exceed 14,000 acres. Acreage is largely held by majors, who have eagerly sought additional protection the past 18 months because of the bright outlook for production and particularly to develop an abundant supply of high-pressure gas to use for fuel and lifting power for the leases in the East Texas field.

Approaching lease expirations at Chapel Hill will result in the drilling of a minimum of 6 tests this year. Sun Oil Company is meeting with success in unitizing short term leases that will be given tests, but the unitization will apply only to gas-distillate production. Royalty owners are cooperating in order to speed up explorations.

The contract price for drilling wells at Chapel Hill is about $6 per foot. Completions in the Pettit zone will cost about $70,000.

Preliminary analysis of the oil produced at Chapel Hill reveals that it is somewhat similar to that found at Rodessa, yielding approximately 33 percent of comparatively low octane gasoline; 24 percent gas oil and distillate; and 12 percent kerosene. The oil is free of corrosive elements.

Shell Oil Company's Dorsey 1, Percilla area, northeastern Houston County, is the second test in the East Texas Woodbine belt to pass the 10,000-foot level, and late last week was drilling at 10,115 feet. It is in the lower Glen Rose series, and may continue to the Travis Peak. Drill-stem test at 9,964-10,012 feet yielded salt water, with 5250 pounds of hydrostatic pressure.

In Limestone County, Murray Samuels and Zephyr Oil Company's Barron 2, located ½ mile northeast of the discovery gas-distillate producer, was showing for a small gasser in Pettit at 5705 feet after washing the hole and using input gas. Five-inch pipe was cemented at 5685 feet, and is due to be perforated in the upper Pettit. Peyton et al's Harris 1-A, projected Trinity test for the west edge of the Mexia field, twisted off drill pipe at 4994 feet.

Geological markers logged by the Chapel Hill tests

Elevation	Hunt's Bradley 1 460	Shell's Campbell 1 449	Sun Co.'s Huddle 1 449
Georgetown Lime	4400—5510	4393—	4357—5498
Paluxy Series	5510—5755	5534—5815*	5543—5781*
First Glen Rose	5755—6454	5815—6550	5781—6485
First Anhydrite Stringer	6454—	6550—	6485—
Second Anhydrite Stringer	6775—	6880—	6810—
Massive Anhydrite	7015—7245	7135—7370	7059—
Second Glen Rose	7245—7528†	7370—8037	.....
Top Pettit	.....	8037—8247†	.....
Top Travis Peak	.....	8247—8600	.....

* Indicated producing zone.
† Producing zones.

West Texas

North Cowden production extended 2¼ miles northwest

Midland, Texas.—The bailing of free oil from the Holt horizon by Stanolind Oil & Gas Company's Cowden 1, fourth deep test for the northwest flank of the North Cowden field, Ector County, assures completion of a producer after the usual acid treatment. Situated 2¼ miles northwest of nearest deep production, Cowden 1 logged broken saturation in lime at 5158-94 feet, corrected measurements, with an elevation of 3115 feet. Tools were used to drill plugs from 5½-inch pipe cemented at 5135 feet. Earlier completions in this second lowest Permian pay for the district required acid to attain steady flow because of the small gas flow.

Operations are under way on two other projected Holt-zone tests in Ector County. M. A. Grisham et al's Cowden 1, near northwest corner, was drilling at 2990 feet, carrying large diameter hole to be prepared to go to the Ordovician. Landreth Production Corporation and Shell Oil Company's Johnson 1-A, wildcat between the Foster and Goldsmith fields, was drilling at 4980 feet. The water level in the Holt zone established by York & Harper et al's Foster 1-D, previously listed as the first deep failure for the Foster field, has been corrected to 5566-75 feet with an elevation of 2954 feet. Bailing test failed to lower the fluid.

In southern Andrews County, Richmond Drilling Company and Tom Hunter's University-Atlantic 1 was drilling at 2930 feet on a 5400-foot contract.

Expansion of the Apco deep oil pool, northern Pecos County, to the southwest appeared probable when Skelly Oil Company's J. S. Masterson 1, C S¼ W¼ H&GN Section 104, Block 10, encountered porosity in coring 25 feet into the Ellenberger to 4585 feet. The last 3 feet was hard dolomite, and operations were halted to cement 5½-inch pipe at 4562 feet. Ten feet of detrital zone, topped at 4550 feet, with an elevation of 2437 feet, overlies the Ellenberger, which is 44 feet higher on structure than a producer ¼ mile to the northeast. This pending completion is on a direct strike from the Apco pool to the new Ordovician area uncovered mid-January by Olson Oil Company and McCandless' Crockett 1, which is awaiting pipe line connection to make final potential gauge.

Humble Oil & Refining Company's Young 1, projected Ordovician wildcat and 8½ miles northwest of the Apco pool, was reaming core hole after progressing to the 4780-foot level. It is due to reach the Ellenberger near the 5000-foot level. Gulf Oil Corporation's Wristen Bros. 5, first scheduled Ordovician test for Ward County, was drilling at 3700 feet, having been delayed

for several months by a crooked hole at 2885 feet. The Holt and the Tubb pays, both in the Lower Permian, are considered prospective producing zones for this test. Gulf Oil Corporation's McKnight 5, outpost for the McKnight sector of the Sand Hills structure, picked up 5 barrels of water per hour while drilling at 6045 feet in Lower Permian. It may continue to the Ordovician if the water can be excluded by squeezing off with jelly seal.

A 9000-foot test for the Hendrick field, Winkler County, has been proposed by Stanolind Oil & Gas Company, which controls a large percentage of the acreage, if a unit plan can be worked out with other lease owners. The structure has not been explored below the regular Permian, although the above company's Hendrick T-67-3-B-1, SWc PSL Section 33, Block 26, is standing with 5 3/16-inch pipe cemented at 3962 feet, total depth.

Gulf Oil Corporation's Swenson 1-B, northeastern Garza County wildcat that was completed last March for a small oil and water well in Lower Pennsylvanian at a plugged-back depth of 7334 feet, was ordered plugged last week. The well flowed when salvage crews opened the well, which had been capped for 10 months because of its isolation from a market. Swenson 1-B encountered thin section of dry Ellenberger limestone before reaching granite at 8085-8104 feet.

Continued development of the Seminole field, Gaines County, is assured by the confirmation that Atlantic Pipe Line Company and Magnolia Pipe Line Company will proceed with installation of pipe line gathering systems. The latter will build an 8-inch trunk line outlet that will handle oil for both concerns. The lines are scheduled to be in operation by April 1, making it possible to terminate tank truck shipments that have been the only market outlet for the 28 flowing producers. The field currently has 13 operations, including 9 drilling tests. The tank truck shipments of crude cost the 9 operators from 18 to 20 cents per barrel in delivering their 34-gravity oil to pipe lines at Wasson and Means fields. Skelly Oil Company's Mann 1, C NW SW Section 220, south outpost, flowed 47½ barrels oil hourly after using 5000 gallons of acid at 5245 feet. It will require 2 direct offsets.

Magnolia Petroleum Company's Sealy 2-43, situated on a separate structure to the south of the Magnolia-Sealy pool, Ward County, was completed as a gasser with an open flow rating of 61,000,000 feet daily. Production is from perforations at 2945-50 feet, with the hole bottomed at 3018 feet. Nominal spray of oil is present with the gas. The company's Sealy 3-43, situated to the southwest, was drilling at 810 feet.

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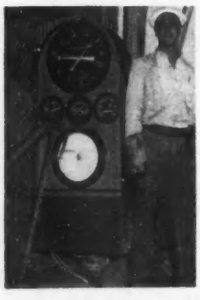

The MacClatchie Weight Indicator Dial insures maximum visibility.

The MacClatchie Weight Indicator incorporates a new type double action hydraulic diaphragm unit mounted in a diaphragm carriage which is easily installed on the line without the use of any clamps, bolts or other means secured to the drilling line.

The diaphragm carriage is so constructed that it insures accurate and sensitive readings under all types of operations.

The readings on the drilling gauge are in direct proportion to the weight on the drilling line and means are provided to compensate for the number of lines between the crown block and the traveling block so that direct readings in tons can be obtained on a single drilling gauge.

Once the carriage is placed in position the operator can complete his well without having any clamps to change when respacing the drilling line. The carriage is so designed so that the operator may spool or move the line in either direction with or without weight freely, as the friction on the sheaves is practically nil.

Temperature Insulated Diaphragm

Another feature which contributes to the greater accuracy of the MacClatchie Weight Indicator is that the fluid is held within the center disc of the diaphragm unit and is protected on both sides by heavy hydraulic rubber diaphragms and a heavy metal covering.

This diaphragm unit is completely surrounded by a special temperature insulator so that the temperature change is held to a minimum. The copper tubing which connects the diaphragm unit with the drilling gauge is also thoroughly insulated. It is securely held in the center of a flexible conduit packed with insulating material. These insulating features insure far more accuracy than heretofore obtained.

The large diameter gauges on the MacClatchie Weight Indicator dial insure maximum visibility and the construction guarantees positive and accurate readings under all conditions.

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Third oil well completed in Halfway north extension

Hobbs, N. M.—More drilling is to be authorized for the Halfway pool, western Lea County, as result of completion of a third oil well for a north extension. Argo Oil Corporation's State 1, C S½ SE NW 16-20s-32e, filled 2460 feet with oil in 7 hours after taking in 2 feet of the porous lime, topped at 2625 feet with an elevation of 3510 feet. This type of production lacks adequate volume of gas to flow natural, but registers large potential on pump with a record for high yield per acre. The new producer is to be offset to the west by Argo Oil Corporation, which has arranged to deliver its production by tank trucks to The Texas New Mexico Pipe Line Company at Lea City station.

The Rhodes pool added a gasser and is assured of an extension for the oil area. The Texas Company et al's Rhodes 1-B, NE SW NE 27-26s-37e, midway between an isolated oil well near the Texas border and the main pool, flowed 22 barrels daily natural when tested through tubing at 3280 feet, and is scheduled to be shot with nitro. The partnership's State 1-Y, offsetting gas production, tested 13,700,000 feet of sweet gas for completion at 3140 feet.

A slight upturn in drilling is indicated for Lea County. Five tests were announced the past week for as many different areas.

The largest completion for the week was Penrose et al's Mattern 6, SWc 7-22s-37e, located in the prolific lime area between the Penrose and Eunice fields, with an average flow of 71 barrels hourly for 6 hours from pay at 3660-3740 feet. Rig has been moved one location east. Ohio Oil Company's State-McDonald 14, NE NW NW 13-22s-36e, southwest outpost, reflected its low structural position in making an initial flow of 37 barrels of oil in 7 hours from pay at 3690-3800 feet.

Southwest Texas

Refugio County discovery producing from Tomoconnor

Corpus Christi—A new Tomoconnor sand oil field has been opened in Refugio County by completion of Norsworthy Production Company et al's B. J. and Cora Fox 1, 4 miles southwest of the McFaddin field. The well gauged 81 barrels of 40.6-gravity pipe line oil in 24 hours through 3/32-inch choke after perforations had been made at 5895-98 feet. The well showed pressures of 1025 pounds on tubing and 2310 pounds on casing, gas/oil ratio being 445 cubic feet to 1 barrel. Drilled under contract by Trinity Drillers, Inc., hole was carried to 6715 feet, and plugged back to 5950 feet after sidewall samples showed sand with oil possibilities at 5893-5907 feet. Casing was set at 5950 feet. Location is in southeast 269.8-acre portion of a 417.8-acre tract in the James Fagan Survey, Abstract 27. Norsworthy holds one half interest in the well and drill site, while Barnsdall Oil Corporation and Transwestern Oil Corporation each hold one fourth interest. Gulf Oil Corporation, Humble Oil & Refining Company and Quintana Petroleum Company each have leases in the area.

Renwas Oil Corporation and John Mayo were making preparations to test G. F. Bayer 1, Garcia Survey, 7½ miles southeast of Victoria in Victoria County. The well, bottomed at 6485 feet, has casing set at the same level. Electric log indicated possible oil sands at 5685-5705, 5785-95 and 5863-70 feet with a broken gas and distillate zone between 6425-80 feet.

In Victoria field, Victoria County, Loma Oil Company quit Schier 1 at 2585 feet. George E. Smith's Stubbs 1 was ready to stop at 4813 feet, testing salt water in the 4700-foot sand. It is 2 miles southwest of production. R. R. Stolley's Louisa Vogt 1, 1100 feet south of the discovery, was a failure at 2706 feet.

Hiawatha Oil & Gas Company's Smith 8-B, after drilling to 10,982 feet, sidetracked stuck drill pipe at 8000 feet and was going ahead below 8500 feet in the new hole. The well is in the Saxet field of Nueces County and is attempting to open new pays at a record depth for the South Texas Gulf Coast.

Having topped the sand at 4788 feet and coring in to approximately 4800 feet, drill-stem test was being run in Arkansas Fuel Oil Company's A. Brand 1, Survey 4, a potential 2-mile south extension to the Wade City field of Jim Wells County. Two wells have been completed in this pay in the field, both making distillate and a large volume of gas.

A third producing zone for the Magnolia City field of Jim Wells County was established through the completion of V. J. Myers and V. F. Simon's Reynolds and Richardson 3, Block 42, Survey 209. The test was carried to 5901 feet, casing landed at 5684 feet. The well flowed 43 barrels of 57-gravity water-white distillate and 1,600,000 cubic feet of gas per day through ¼-inch top and 11/64-inch bottom-hole chokes under 1000 pounds tubing and 2150 pounds casing pressures. Perforations had been made at 5615-25 feet with 24 shots.

Salt Flats outpost success will encourage more drilling

San Antonio.—A series of new outpost wells along the Salt Flats faulting is expected to immediately result from the discovery of a new Austin chalk producing area in Guadalupe County by A. J. Holifield. The field was opened through completion of D. M. Day 1, James Hinds Survey, 2 miles southeast of Luling. The hole had been carried to 2830 feet, 18 feet into the Edwards limestone, then plugged back to 2685 feet. It is producing from the Taylor marl, Austin chalk and Buda limestone, casing having been set at 2337 feet.

The discovery showed some oil when first tested, but after injection of a 2000-gallon acid dose, it flowed at the rate of 10 barrels of 37-gravity crude per hour. The flow apparently would not be consistent, hence, it was placed on pump. The well was drilled under contract by Pegg Brothers of San Antonio.

The well developed a fault of major

Patent No. 1,640,341 and patents pending.

The MacCLATCHIE 3-CONE WALL CUTTER

(FOR ENLARGING THE DRILLED HOLE)

THE NEWEST—FASTEST—WAY TO ENLARGE HOLE BELOW THE SHOE!

Are you looking for a quick, easy and safe way to enlarge the hole below the shoe—so that you can cement, land liners, run pipe and do a lot of other bottom hole work more efficiently and cheaply?

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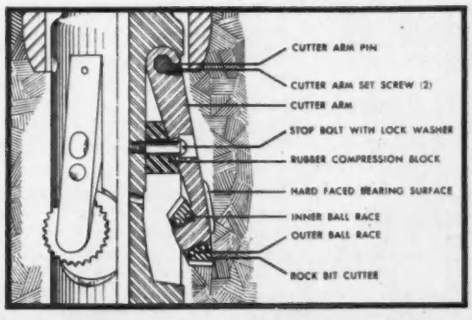

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displacement, apparently the extension of the system from the Salt Flats field southwesterly toward Darst Creek.

In Atascosa County, Casray Oil Company and Red-Bank Oil Company's Pratt 1, a mile west of Anchorage, had a slight oil recovery from Taylor marl at 2386 feet and was preparing to deepen to the Serpentine.

Sam Vanderweide's Witting 1, 3 miles northeast of Shattel in Frio County, topped Austin chalk at 4740 feet, but failed to show anything and was going ahead below 5000 feet. It is running about normal with the several wells drilled by the Humble Oil & Refining Company in the area.

Shell Oil Company is having trouble with a geophysical shot hole in Gonzales County which has been running wild for the past 6 weeks. The well is located on the H. K. Weber tract 4 miles southwest of Nixon. The company had been drilling test holes for seismograph work, this one blowing out December 31 at about 600 feet. It caught fire January 30, burning the rig and equipment. Preparations were being made to drill a directional hole nearby to pump mud into the sand.

Fred Pederson has reentered the Tanglewood prospect in Lee County with a drilling operation. Oscar Brown, D. Hudson Survey, which has been producing about 1½ barrels of oil and 90 barrels of salt water per day on pump for several months, is being deepened, last reports being that the hole is below 7350 feet. It topped the Edwards limestone at 6394 feet and was producing at 6424 feet for several months before the deepening job.

Colorado County Wilcox test gets only odors with salt water

San Antonio.—Davis & Company's tests of the Wilcox formation in a deep well on the Garwood structure in Colorado County has netted nothing more than salt water with oil and gas odors. McLane 1-A was plugged back from 10,536 feet. Perforations were made at 9958-84 feet, then two sets at 9843-60 and 9752-66 feet, then at 9766-72 feet. All were salt water. Plug was set at 9740 feet for additional tests higher in the hole. It is expected to test in a sand section at 9485-9527 feet where distillate was indicated.

In DeWitt County, Atlantic Refining Company's Conwell 1, on the Myersville fault, is below 7100 feet, about 1000 feet from its objective. The three Sparta-Wilcox operations in Bee County are drilling at depths ranging from 5000 to 6000 feet. Edwin M. Jones' West, northwest of George West in Live Oak County, is below 4000 feet and Sinclair Prairie Oil Company's Callaghan in northeastern Webb County, has been spudded.

Two Kelsey field edge tests troubled with salt water

Edinburg, Texas.—Humble Oil & Refining Company is quickly defining the Kelsey field, which has spread into Brooks, Jim Hogg and Starr counties. McGill Brothers 52, southeastern portion of the pool, topped sand at 4752 feet, low, and on drill-stem test at 4751-59 feet showed 800 feet of oil and 200 feet of salt water in 43 minutes. It was deepened to 5114 feet, then abandoned. McGill 51, also on the east side of the field, was stopped at 4808 feet, having shown 90 feet of salt water and 90 feet of oily mud with no pressure in 20 minutes at 4939-53 feet.

Royal Oil & Gas Company's Juarez 1, 6200 feet west and south of the field, expects to pick up the sand at any time, coring below 4762 feet. Sun Oil Company's E. Rodriguez 1, 8 miles southwest of the same pool and 5 miles northwest of the Sun production, was coring below 5450 feet, having gone through numerous sands with oil and gas showings.

Davis & Company were planning a further expansion of their activities in the Rincon area of Starr County. The company is running two rigs in the field. A new completion possibly is the discovery of another sand lens. Slick 2-A, Section 485, was completed through perforations at 3995-4022 feet, where it flowed 46 barrels of distillate per day through ⅜-inch choke.

Ask 100-barrel allowable for Mankins, Archer County

British American Oil Producing Company requested an allowable of 100 barrels daily for the four wells in the Mankins field, Archer County, at a hearing before the Texas Railroad Commission last week. The wells are now permitted to produce 35 barrels each.

J. A. McCutchin, company engineer, testified that gas/oil ratios, which vary from 600/1 to 1000/1, are not materially affected at rates of flow between 40 and 100 barrels. No water has been encountered in the Caddo lime, producing horizon.

Consider rules for Fagan field February 17

The Texas Railroad Commission has set a hearing for February 17, at Austin, to consider operating rules for the new Fagan field, Refugio County.

Texas Gulf Coast

Double Gum Bayou looms as new producing area

Houston.—Titantic Oil Company's Boyt 1, Double Gum Bayou area, H. & T. C. No. 9, Liberty County, was closely watched as it promised to open a new producing area for the Gulf Coast. Bottomed at 8834 feet, it blew out showing gas. Drill pipe was stuck, and operators were fishing at 857 feet. Some reports are that the wildcat showed oil and also had a good oil sand up the hole, and other reports are that it showed only gas when it blew out.

J. F. Hutchin's Borden 2, Mackey area, Wharton County, which established the first producing area in the Texas Gulf Coast this year was opened last week and it made an estimated 9 barrels of dark 34.8-gravity distillate in 12 hours through ¼-inch choke. Tubing pressure was 1900 pounds. Borden 2 was perforated with 48 shots at 4758-71 feet and it came in flowing gas and distillate through ¼-inch choke and then was shut in after the connections froze up. The well has given trouble with frozen connections since it has been completed.

Titantic Oil Company's second well on the northeast side of South China, C. T. Gaylor Survey, Jefferson County, was flowing 150 barrels of fluid daily, 80 percent oil and 20 percent salt water, through a 7/64-inch choke. Tubing pressure was 800 pounds and casing pressure was 1800 pounds. The well was perforated with 72 shots at 7488-7518 feet.

Fairbanks Area

One mile east of Fairbanks, Harris County, Martin Thompson's Fuchs 1, J. Doswell Survey, attracted considerable attention when it cored a sand with an odor of oil at 6850-61 feet. A drill-stem test showed salt water, and preparations were being made to deepen. About 2 miles west of Fairbanks, Harris County, T. A. Carlton's Sweeney 1, J. J. Sweeney Survey, was abandoned last week at 7011 feet in shale. Salt water sands were cored at 6820-30 feet.

West of the Ogburn area, Harris County, Cities Service Oil Company's Cook 1 was coring in sandy shale, showing salt water, at 6659 feet. Salt water sand was topped at 6639 feet.

Rosenberg

Humble Oil & Refining Company's first well at Rosenberg, Ft. Bend County, since the purchase of this producing area from H. C. Cockburn, was coring ahead below 8270 feet, below the regular producing sand. Miller 1, L. E. Gross Survey, had sandy shale with a gas odor at 8075-85 feet, sand with gas show at 8145-52 feet, and sand with gas and distillate show at 8152-62 feet. West of the discovery, Fred Browning's Socha 1 was flowing an estimated 75 barrels of fluid daily, 15 percent salt water, through ¼- and 12/64-inch chokes after casing was perforated at 7713-34 feet. Tubing pressure was 1150 pounds and casing pressure was 1900 pounds.

Three miles north of Cedar Point field, Chambers County, George Anderson was running casing at Lawrence 1, W. D. Smith Survey, at 7215 feet. The wildcat had a show of oil at 7131-35 feet. Side wall cores were taken at 7134 feet and they showed a gas odor at 7144 feet, sand was recovered but with no shows of oil or salt water. The hole is bottomed at 7215 feet in salt water sand.

Anchor Field

About 4200 feet northeast of the discovery well at Anchor, Brazoria County, Humble Oil & Refining Company's Galzink & Taylor 1, J. De. Valderas Survey, was coring in sandy shale below 10,130 feet. This test cored sandy shale with an odor of gas at 9705-40 feet, sandy shale with a gas and distillate odor at 9750-9810 feet, and it had a distillate odor at 9980-10,000 feet. Northwest of the discovery 2200 feet, Glenn H. McCarthy made another test on Salmon et al 1 and recovered distillate and salt water. The test has been killed to rework. Salmon et al 1 was perforated with 24 shots at 10,495-99 feet and it came in making 6 barrels

per hour, 50 percent salt water and 50 percent distillate. Tubing pressure was 1100 pounds and casing pressure was 1700 pounds. The operators also made a test at 9400-06 feet and recovered salt water.

In the Chocolate Bayou, Brazoria County, Glenn H. McCarthy is carrying two wells deeper than the regular producing horizon. Andrau 1, ¼ mile southwest of the discovery, was drilling in shale below 10,700 feet. Seven and five eighths-inch protection casing has been set in this well. Houston Farms Development Company 2 was drilling in shale at 10,750 feet. Protection casing has also been set in this test. It is reported that both tests may be drilled to 12,000 feet.

North of Matagorda, Matagorda County, Gulf Stream's Zyprian 1, L. Lassassier Survey, was abandoned at 4060 feet in shale. The wildcat is reported to have had a gas show around 3240-49 feet.

Peyton Brothers attempt to make a Wilcox oil producer out of Kirby West C-2, Ace area, Polk County, failed and the test was abandoned at 7919 feet in salt water sands, topped at 7910 feet. It had a show of gas at 7867-81 feet and at 7904-19 feet.

Louisiana Gulf Coast

Deep sand opened at Anse La Butte, St. Martin Parish

Lake Charles.—The week's outstanding development on the Louisiana Gulf Coast was the discovery of a new deep sand on the west flank of Anse La Butte, St. Martin Parish. This is the second old salt dome in this district to produce oil from a new sand this month. The first was at Bayou Blue in Iberville Parish, where Superior Oil Company completed Schwing Lumber Company 1.

Glassell & Glassell's Breaux 1, Section 117-9s-5e, a ½ mile west of Anse La Butte, was perforated at 4630-50 feet and it came in flowing 125 barrels of pipe line oil daily through a ⅛-inch choke with tubing pressure of 675 pounds and casing pressure of 660 pounds. The test was drilled to 5685 feet in salt, topped at 5390 feet, and 7⅝-inch casing was set at 5500 feet. It was first perforated with 23 shots at 5285-91 feet where a drill-stem test showed salt water and a scum of oil. The hole was plugged back and completed in the Miocene sand at 4630 feet. The outpost test is reported to have logged 50 feet of sand at 4630-80 feet, but the lower portion carried salt water.

On the southwest side of Bayou Blue, Iberville Parish, Superior Oil Company completed Schwing Lumber Company 1, Section 74-9s-10e, for a good well from a new sand. The outpost was drilled to 6802 feet in salt, topped at 6670 feet and 7-inch casing set at 5202 feet was perforated with 76 shots at 5003-17 feet and at 5025-30 feet. It came in flowing 256 barrels of 31.6-gravity oil in 18 hours through a 11/64-inch choke. The gas/oil ratio was 200 to 1.

The discovery of new deep sands at Anse La Butte and Bayou Blue will lead to a rapid drilling campaign in these areas. Superior Oil Company has already made location for Schwing Lumber Company 2, 990 feet west of the discovery well and in Section 74-9s-10e, at Bayou Blue. Iberia Petroleum Company has made location for Moresie 1, Section 118-9s-5e, at Anse La Butte.

These old salt domes have produced a small amount of oil from the tops, and the new sands will lead to further development on the flanks of the domes for other deeper sands, possibly in the Oligocene formations. When flank production was found at West Hackberry, Jennings, Venice, New Iberia, Jefferson Island and other areas, reserves of the districts were increased greatly. These salt domes were drilled at a rapid pace and in some instances the fields were the most active areas in the Coastal country.

Protection Casing

Barnsdall Oil Company's Nelson Development Company 1, wildcat in Section 2-21s-11e, was bottomed at 10,505 feet, and 8⅝-inch protection casing was set. Two electric logs showed possible producing sands at 7025 feet, 7426 feet and 10,165 feet. The deepest zone had 50 feet of sand which had a good gas odor.

Tide Water Associated Oil Company was preparing to make another test on Delta Farms 1, in the Delta Farms area, Lafourche Parish, at 8748-60 feet. After making a test at 8917 feet that showed gas, distillate and sand, operators perforated casing at 8880-85 feet and at 8775-80 feet to make a squeeze job.

Shell Oil Company will probably start making tests on Jeanerette Lumber Company 4, outpost test at West Lake Verrett, St. Martin Parish, this week. Seven-inch casing has been set to 10,696 feet. The test logged a number of new sands for the field, and it is believed that the sands from the bottom on up the hole will be tested before the test is finally completed.

In Cameron Parish, Phillips Petroleum Company was still fishing in Miami Corporation 1, Section 11-14s-6w, at 10,195 feet. The well blew out a week ago, making gas and mud, and drill pipe was stuck.

Southeast of production at Ville Platte, Evangeline Parish, Danciger Oil & Refining Company's Vidrine 1, Section 1-4s-2e, was fishing at 10,124 feet. The Wilcox formation was topped at 9890 feet, and sands with a show of gas and distillate were logged at 9904-9914 feet and at 9968-93 feet. This test is running higher on structure than other wells in this area.

On the Erath prospect in Vermilion Parish, The Texas Company's Vermilion Parish School Board 1 was drilling in shale at 11,300 feet in a sidetracked hole. This wildcat logged a sand with a show of gas and distillate at 10,443-73 feet and salt water sands at 10,659-79 feet. It also had a show

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of gas and distillate around 10,435 feet in the first hole. Orginally drilled to 10,595 feet, it had a fishing job, was plugged back to 10,250 feet and side tracked.

Third at Paradis

The Texas Company is preparing to complete its third well at Paradis, St. Charles Parish. LLE Paradis 3 logged the deep oil sand higher than the discovery. It had sands showing oil at 10,188-256 feet. The hole was drilled to 10,490 feet where 7-inch casing was set.

The Texas Company's first well at Grand Bay, Plaquemines Parish, logged oil sands at 9296-9312 feet. State Lookout Pass 1, Section 48-20s-18e, is being deepened and will probably try to pick up the sand below 10,000 feet that was found in Gulf Oil Corporation's wells. The latter company's Grand Prairie Levee District 6-A, Grand Bay, flowed 1062 barrels daily from a new sand at 9980-90 feet.

Humble Oil & Refining Company is preparing to complete its second deep producer on the southwest flank of Darrow dome, Ascension Parish. Gumble 17 was drilled to 8570 feet and plugged back to 8341 feet. It had a sand at 8273-83 feet and at 8283-86 feet which had a show of oil. A 20-minute drill-stem test showed 240 feet of oily mud.

On the Denham Springs prospect in Livingston Parish, Roberick & Tower located Pirie 1, Section 41-7s-3e. The wildcat will probably be drilled to the Wilcox.

North Louisiana

Two deep tests plug back to make gas producers

Shreveport.—Two wells drilled below the Permian salt and found non-productive at deep levels were completed last week in North Louisiana after having been plugged back to shallow horizons.

On the northeast flank of the Monroe field and outside production, Union Producing Company's Tensas Delta A-1, NE SW 8-22n-4e, Morehouse Parish, drilled to 10,475 feet and plugged back to 2353 feet, was completed in the Monroe gas horizon after having logged base of Permian salt at 9082 feet (elevation 71 feet), gauging 2,500,000 cubic feet of gas daily.

In the shallow Pine Island field, Caddo Parish, Stanolind Oil & Gas Company's Dillon Heirs 131, C SW NE 14-21n-15w, drilled to 11,419 feet into igneous material and 2 feet below base of Permian salt, was plugged back to 3950 feet and completed in the Travis Peak, after being non-productive in the Lower Marine series, making 1,500,000 cubic feet of gas and 150 barrels of salt water daily.

The Pine Island field continued to hold its lead in drilling activity among North Louisiana districts, 5 oil wells ands 2 gas wells being added in that district out of 9 completions last week in North Louisiana.

Gulf Refining Company's Hodges 20, NW NE 24-16n-12w, deep test in the shallow Elm Grove field, which logged top of Lower Marine at 8260 feet, cored and drilled ahead without any showing at 8457 feet in hard gray sand with shale streaks.

Sugar Creek Syndicate's northeast outpost test at Sugar Creek, Claiborne Parish, Robinson 1, NE SE 32-20n-5w, swabbed after failing to flow when washed following perforating of casing in the Travis Peak at 5745-60 feet. Total depth is 5815 feet.

Arkansas

Another try for Smackover in Union County abandoned

El Dorado, Ark.—Barnsdall Oil Company last week abandoned at 9060 feet W. M. Cameron 1, SW NW 36-19-17, Union County, a Smackover lime geophysical wildcat prospect. Top of Smackover lime was 9026 feet. Electric log was run. Gulf Refining Company recently abandoned a similar test in Columbia County, 4 miles northwest of the Dorcheat (Experiment) field.

Fohs Oil Company's and Delta Drilling Company's workover at C. T Grace 1, SE SE 31-17-14, Union County, that showed salt water in the Smackover lime and was plugged back recently, flowed 300 barrels of fluid daily, 75 percent oil, into tanks in a 24-hour period last week after casing was perforated at 3465-68 feet. This is deeper than production in the old Rainbow City field near which it is located.

Tide Water Associated Oil Company has awarded contract to Big West Drilling Company of Dallas, headed by Grady Vaughn, for 8 Smackover lime tests to be drilled in the Atlanta field, Columbia County, where Tide Water Associated has a 20-well program for 1940. The tests will be drilled in pairs.

Three drilling permits were issued last week by the Arkansas Oil and Gas Commission, as follows: Columbia County—Atlantic Refining Company's J. J. Gunnels 1, C SW SW 20-19-17; Standard Oil Company of Louisiana's A. W. Gunnels 1, C SW NW 20-19-17; Union County—Laney and Berg's N. C. Cutrer 1, SEc NW SW 21-17-14.

Mississippi

Tinsley Dome now has 20 wells; 3 new starts

Jackson.—The Tinsley Dome field of Yazoo County, discovered late last August, added 3 oil producing wells last week, bringing to 20 the total number of producers and showing the field to be one of major importance. Three new locations were made last week. Total yield of wells in the field to February 1 was approximately 250,000 barrels.

Union Producing Company's Perry 3, C NW NE 24-10n-3w, topped chalk at 4495 feet, cored the Woodruff sand at 4585-4614 feet and bottomed at 4648 feet. The company's Jennie Stevens 9, SW SW 1-10n-3w, ½ mile east of a

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north 1¼-mile outpost producer, cored into the oil sand at 4765 feet.

Tentative locations were made by Sid Wheless on two wildcat blocks in different counties in south Mississippi. He plans to spud immediately on a test in NE SW 1-8n-12w, Jones County, on a 2500-acre block, and also to start drilling immediately on a 6000-acre block in Copin County, tentative location being in NE NE 19-1n-3w.

E. W. Luker, of Oklahoma City, has acquired 7000 acres in Township 6 north, Ranges 3 and 4 east, Rankin County, centering around Section 24-6n-3e. Fohs Oil Company is detailing a block in southeast Rankin County and western Smith County, centering around Section 25-3n-5e. H. L. Carnahan, of Lake Charles, Louisiana, has been leasing in the same area. Gulf Refining Company has sent a geophysical unit into west Lauderdale County, north of Mehan Junction.

B. B. Jones et al have taken an interest in Cleve Love et al's N. E. Garner 1, SW NE 1-10n-7w, Simpson County wildcat, drilled to 3050 feet. Heavier rig is being moved in to deepen.

Michigan

Year's second pool opened by 40-barrel well

Mt. Pleasant, Mich.—The second discovery for 1940 in Michigan, Strom & Shiffmans' Lund 1, NW NE NE 15-11n-16w, Muskegon County, was completed for a 40-barrel pumper at 1865 feet in the Traverse limestone, but may be carried deeper for a Dundee lime test. Natural, Lund 1 swabbed 41 barrels. After 500 gallons of acid it stepped up to 9 barrels an hour with swab agitation but settled back after the first day test to about 40 barrels. The wildcat is five miles north of the old Muskegon field, the district which provided Michigan's 1927 boom and the only active West Michigan Traverse field prior to 1937 when the Allegan, Van Buren and Kent excitement got under way.

Sun Oil Company is plugging back from 3926 feet, after drilling a deep Dundee-Monroe lime zone, to 1450 feet to test a stray sand show on the State A1, Section 11-19n-6w, 4 miles northeast of the Temple field.

C. L. Maguire, Inc.'s Clark 1, Section 32-16n-2w, Warren Township, Midland County, wildcat, topped Dundee at 3726 feet and was drilling below 3900 feet without logging any commercial pays.

Van Lew Petroleum Company reported a good gas show in the upper Traverse at 1974 feet on Willett 1, Section 8-5n-3e, Shiawasee County wildcat, but at 1986 feet no commercial oil pays had been found.

The Wise field, Isabella County, currently the hot spot in the basin, was narrowed on the southwest side this week when the lone completion for the field, a ¼-mile extension test, failed to produce. It was Cryden Petroleum Company's Morrison 1, NE NW SE 29-16n-3w. Dundee was logged at 3655 feet and the hole bottomed at 3746 feet.

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Rocky Mountain States

Sundance at Lance Creek gets important extension east

Casper, Wyo.—One of the most important recent extensions in Rocky Mountain producing fields was made last week in the Lance Creek district by Continental Oil Company's Rodeo 3 OPC-4, SE NE NE 35-36n-65w, which proved the extension of the Sundance sand over ¼ mile east of former limits when it tested 7½ barrels of oil per hour after cleaning out.

An old Muddy sand producer, the well was originally completed in 1919 as a small producer in the shallow district of the field but was not produced commercially for long because of market shortages. With recent development of production along the eastern rim of the Lance Creek structure, operators reopened operations on this old producer, deepening from 3708 feet to 4315 feet, the Sundance sand horizon.

A number of other old shallow producers are located in this area and may also be deepened to the lower Jurassic beds. A deep test to the Pennsylvanian horizons in this locality is also seen as a possibility for the coming summer. A number of wells are drilling in the eastern sector of the field at this time, but to date no location has been released beyond the newly completed extension well.

Interest in the southern Wyoming district is centered on the West Ferris field, Carbon County, where Sinclair-Wyoming Oil Company is nearing completion on a deep test to the Tensleep (Pennsylvanian) formations. The company's 4-E, CSE SW 29-26n-87w, has been drilled to 4292 feet, in the objective sand, and 7-inch production casing has been cemented in the upper sections of the formation at 4273 feet. Plug is to be drilled this week. This is the first well in the field to be drilled below the Sundance producing horizon and may open a new zone for development. The structure is a local uplift midway between the Ferris and Mahoney Dome fields, and on the same general uptrend on which the Lost Soldier and Wertz fields are located further to the west. Tensleep production has been developed in all these other fields, giving considerable credence to the belief that commercial production will be developed in the sand at this location.

Recent renewal of activity in the Garland field, principal producing area in Big Horn county, northern Wyoming, is being continued with announcement that Mule Creek Oil Company will deepen Binney-Sessions 1, SEC NW NW 34-56n-97w, for recompletion in the Madison lime. The well is an old gasser originally completed several years ago in the Dakota horizon at 1804 feet. Rotary equipment has been rigged up and operators were drilling below 2004 feet. The Madison horizon is generally encountered at about 4000 feet in this field. The test is a direct east offset to the company's Sessions 1, completed a week ago for 350 barrels daily from the Madison after deepening to 4155 feet. The crude is an asphalt base product finding its principal market in refineries at Cody and Lovell, Wyoming, where the basic materials are processed into road oils for this territory.

Prospects for northern extension of the Minnelusa producing formations of the Dewey Dome field, Weston County, northeastern Wyoming, were brightened last week when operators drilled into the upper sections of the sand in Bruce C. Teeters' State 1, SWC SW NE 36-64n-61w, after sidetracking tools lost in hole at 2286 feet while drilling in. Well is deepening below 2290 feet in the sand and reports some showings of oil. This is the test which opened the Sundance sand of the field for commercial production when it encountered a flow of from 8 to 10 barrels per day, natural, in this formation at 988-1017 feet late in 1939. Hole is being drilled to the usual producing formations of the field. Location is about 2 miles north of the regularly-developed section of the field.

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California

Propose 30 tests in Los Angeles harbor

Los Angeles.—A proposal for drilling 30 wells southwest of present production limits of the Long Beach-Wilmington pool, in the Los Angeles harbor, is before the Los Angeles city council. The wells would be drilled on Mormon Island, 15 to be whipstocked under Slip No. 5 and East Basin channel, and the remaining 15 to be bottomed under the island. The city owns mineral rights under the island, while the Banning Estate owns mineral rights under the slip and the channel, as well as surface rights on the island.

Continental Oil Company's Community 1, wildcat in Section 12-28-24, Shafter area of Kern County, was drilling below 8000 feet last week. Projected for the Vedder at about 12,000 feet, Seaboard Oil Company and Union Oil Company are participating in the test.

Universal Consolidated Oil Company's Catanni 2, Section 15-31-29, in the Arvin pool of Kern County, was completed for 900 barrels of 28-gravity oil from 6149 feet. The Chanac was logged at 5060 feet and 7-inch set to 6120 feet.

Application of Basin Oil Company for permission to drill six additional tests on the Potrero Country Club lease in the Potrero field has brought circulation of petitions in the City of Inglewood asking a special election on an ordinance for a city-wide ban on drilling. The petitions are being circulated by the Inglewood Civic League Against Oil Drilling.

Principles of Sedimentation

Principles of Sedimentation, by W. H. Twenhofel, professor of geology at the University of Wisconsin, is a step on the road to better understanding of sediments and sedimentary processes and employed an arrangement and presentation different from any previously used. Emphasis is placed upon the concept that sediments are products of environment and heritage. Understanding of sedimentation is held to be best attained by complete consideration of those environmental factors that have major influence in production, transportation, deposition and subsequent modification of sediments. The subject is thus entered, and consideration of products postponed until the matter of environments has been probed.

The book, priced at $6.00, is available from the Book Department of Gulf Publishing Company, 3301 Buffalo Drive, Houston, Texas.

UNITED STATES WELL COMPLETIONS

Company, Well and Location	Init. Prod. Bbls.	Depth
Arkansas		
Columbia County (Magnolia)—		
Standard, D. R. Booth 2, 24-17-20	900	7585
Union County (Wildcat)—		
Barnsdall, W. M. Cameron 1, 36-19-17	*	9069
California		
Los Angeles County (Aliso Canyon)—		
Tidewater Associated, Porter 3	2467	5450
Los Angeles County (East Coyote)—		
Bartholomae Oil Co., Stern 1	281	5952
Los Angeles County (West Montebello)—		
Junior Oil Co., Kay 1	460	7610
Los Angeles County (Dominguez)—		
Shell, Reyes 100	52	8274
Los Angeles County (Newhall-Potrero)—		
Barnsdall, R. S. F. 1	376	7012
Los Angeles County (Rosecrans-Athens)—		
Southern Calif. Pet., Rowena 1	125	7465
Los Angeles County (Seal Beach)—		
Tidewater Associated, Bryant 1	500	4343
Los Angeles County (Wilmington)—		
Hancock Oil, Harbor B-20	521	4069
Long Beach Oil Dev., "Z" (LB) 4	435	2872
Union Pacific, UP (LB) 121	805	4061
Kern County (Belridge)—		
Belridge Oil Co., No. 22	321	8390
Kern County (Canal)—		
Shell, KCL A-21-13	50	8980
Kern County (Coles Levee)—		
Richfield, KCL A-58-29	1870	9085
Fresno County (Coalinga-Northeast Field)—		
Amerada, Ewing 22-20	3065	8182
Fresno County (East Coalinga Eocene Pool)—		
Robert S. Lytle, No. 37-18F	2253	7824
Kern County (Kern River)—		
Dick & Dore, No. 7	5	625
No. 16	5	606
Kings County (Kettleman No. Dome)—		
K. N. D. A., No. 36-26Q	3308	8496
Standard, No. 63-7Q	871	8010
Kern County (Round Mountain)—		
California Western, No. 12	200	1979
Ventura County (Rincon)—		
C. C. M. O., Hobson B-10A	105	4521
Hobson B-26	275	4926
Ventura County (Ventura Avenue)—		
Shell, Taylor 111	1585	7360
Illinois		
Clay County—		
Pure, Rule 1, c w½ nw nw 7-4n-10e	108	3055
Clinton County—		
Johnston-Burnham Drlg. Co., Bailey-Marshall 1, lot 19, blk 2, 13-1n-1w	212	2915
W. Curry, DuComb 1, 230 ft e of se nw se 13-3n-1w	5	1489
International, Adams 2, c ne ne ne 13-3n-1w	*	1452
Benoist 1, ne ne se ne 24-3n-1w	*	1540
John Mackler, Simpson 1, nw nw nw 35-3n-1w	*	831
Fayette County—		
Gulf, Whitehead 4, ne ne ne 1-5n-2e	120	1619
Ohio, Schwarm 6, se sw sw 30-6n-3e	192	1619
Carter, Griffith 11, sw sw ne 31-7n-3e	120	1590
Sinclair 6, ne nw ne 2-8n-3e	56	1546
Taylor-Reed 2, ne se sw 12-8n-3e	228	1505
Kline 2, se sw nw 13-8n-3e	318	1519
Gallatin County—		
Kingwood, Robinson 1, c ne nw nw 4-8s-8e	*	2915
Angle & Angle, Duffey 1, ne nw nw 25-8s-9e	*	3077
Jefferson County—		
Alma Oil Co., Cunningham 1, 312 ft n of sw nw se 3-1s-2e	145	1988
Copple 1, se nw sw 4-1s-2e	*	1975
Marion County—		
Frontier Oil & Gas, Friedrick 4, sw sw nw nw 9-1n-2e	75	1866
Magnolia, Chitwood 41, 43 ft e of c wl se ne sw 16-2n-2e	130	2047
Kingwood-Bell, Shanafelt 22, ne sw nw ne 20-2n-2e	3912	3420
Texas, Young 23, se c ne 20-2n-2e	1897	3464
Young 19, nw nw sw nw 21-2n-2e	3430	3464
Magnolia, Shanafelt 32, se nw se sw 29-2n-2e	5966	3440
Young 18, se ne sw ne 29-2n-2e	3648	3424
Texas, Friedrich 22, 50 ft s of nw nw sw 29-2n-2e	378	2010
Stroup 14, c w½ sw se 30-2n-2e	364	2000
Monroe County—		
Ames Pet. Co., Theobold 3, se sw se sw 35-1s-10w	45	440
S. Brooks Remington Co., Kohmar 1, nw nw ne nw 2-2s-10w	115	432
Richland County—		
Pure, Rule 1, c w½ nw nw 7-4n-10e	1456	2960
Glossbrenner 3, c e½ se nw 31-5n-10e	254	2875
St. Clair County—		
Joe Longoriz, Schaller 1, nw ne nw 10-3s-7w	*	1704
Wabash County—		
Delta Drlg. Co., Utter 1, se se se 17-1s-12w	19	2060
Oliver Pet. Co., Nash 1, ne se se sw 9-2s-13w	87	1825
Continental, Gray 5, se sw sw 20-2s-13w	78	2498
Longhorn Oil & Gas, Heil 4, sw se sw sw 7-3s-13w	110	2549
Washington County—		
Magnolia Pet. Co., Paszkiewicz 1, nw sw ne 23-3s-3w	56	1284
Wayne County—		
Pure, Padgett 1, c w½ nw sw 34-2n-8e	232	3132
White County—		
Fisher et al, Griffin 1, 50 ft s of se se sw 28-3s-9e	103	3505
R. W. Slemaker, Hanna 1, sw nw ne 31-5s-10e	*	3192
Ray E. Johnston, Storms Hrs. 1, ne nw se 23-6s-9e	60	2267
Williamson County—		
Carterville Oil & Gas, Colp 1, se se nw 2-10s-1e	*	2232
Indiana		
Dubois County—		
N. N. Smith et al, Schubnell 1, ne se se sw 182-1s-6w	*	1425
Gibson County—		
H. M. Horton et al, Upham 1, 25 ft s of c sl se ne ne 3-1s-12w	*	2415
Gwin Drlg., Skiles 1, sw sw nw ne 18-3s-13w	*	2575
Jay County—		
Clarence Welch, Brinkerhooff 8, 180 ft n of c n½ ne ne 21-24n-14e	25	1066
Posey County—		
Superior Oil Co., New Harmony Realty Corp. 22, nw ne se 9-5s-14w	150	2209
New Harmony Realty Corp. 25, ne se ne 9-5s-14w	100	2195
Vanderburgh County—		
E. J. Walters et al, Indiana Trust & Savings Bank 1, sw ne ne sw 18-7s-11w	*	1844
Kentucky		
Daviess County—		
Stewart & Snyder, Hansford 4	200	1502
Ohio County—		
T. A. Galey, Tucker 3	10	924

*Failures; †Junked; ¶Million cu. ft. gas.

Summary of Drilling Operations in the United States, Week Ended February 10, 1940

	WELLS COMPLETED							PERMITS FOR NEW WELLS*				
	Completions	Oil Wells	Gas Wells	Failures	Initial Production	Total 1940	Total this Date 1939	This Week	Total this Month	Total 1940	Total this Date 1939	Year Total 1939
Alabama							1					
Arizona												
Arkansas	2	1		1	900	24	34	3	3	10	19	223
California	23	23			19,935	168	126	19	36	133	135	1,136
Colorado						2	2					
Florida												
Georgia												
Illinois*	40	31		9	23,919	433	443	88	141	517		893
Indiana	7	3		4	275	55	11					
Kansas	26	20		6	28,149	188	150	29	58	175	159	1,583
Kentucky	2	2			210	36	100					
Louisiana	31	26	3	2	7,105	207	112			127	129	1,449
Michigan	23	15	3	5	2,940	171	133	22	45	180	102	1,419
Mississippi	3	3			1,850	20	1					
Missouri	1			1		2						
Montana						20	14					
Nebraska								2	2	2		
New Mexico*	13	7	2	4	1,937	100	88	13	19	88		293
New York						125†	68†					
North Dakota												
Ohio	12	7	5		41	130†	115†					
Oklahoma	34	21	1	12	7,612	260	233	34	70	229	235	2,059
Pennsylvania	43†	25†	7	11	38	337†	163†					
South Dakota												
Tennessee												
Texas	180	132	1	47	84,990	1,277	1,287	167	510	1,478	1,143	10,269
Utah												
West Virginia	9	2	7		13	94	67					
Wyoming	1	1			350	22	30					
Total this week	450	319	29	102	180,264	3,633	3,178	377	909	2,941	1,922	18,752
Total last week	470	329	36	105	193,092	3,183	2,667	532	532	2,564	1,598	18,752
Total this year	3,633	2,586	240	807	1,277,066			2,941				

* This tabulation includes those states where weekly data are available; figures for Illinois date from October 15, 1939; New Mexico from August 1, 1939.
† Includes water-input wells.

United States Well Completions—*Continued*

Kansas

Barton County—

Company, Well and Location	Init. Prod. Bbls.	Depth
Republic Natural Gas Co., Bloomer "B" 3, sw ne nw 14-17-11w	*	3373
Butler County—		
Adair et al, Ramp 2, ne nw nw 23-28-7e	40	2691
Simpson Oil Co., Steinhoff 4, c s½ se se 21-29-6e	25	2181
Ellis County—		
Shell, Rumsey 30, se ne ne 23-11-17w	3000	3400
Bay Petroleum, Riddler "B" 2, se nw se 1-11-18w	3000	3502
Wakefield et al, Burnett 2, c e½ sw ne 1-11-18w	3000	3520
Gulf, Koerner 3, c s½ ne sw 11-12-18w	3000	3689
Harvey County—		
Shell, Schmidt 2, ne se ne 5-22-3w (otd 3519½ ft)	10	3239
McPherson County—		
Westgate-Greenland, Chindberg 1, c n½ ne se 18-18-1w	*	2808
Ohio, Peterson 1, c w½ nw sw 29-20-5w	57	3385
Sunray, Briggs 3, c w½ nw nw 29-20-5w	3000	3383
Continental, Bornholdt "A" 1, c e½ ne se 30-20-5w	1491	3385
Rice County—		
Hollow, Stout 4, c n½ sw ne 6-18-10w	3000	3224
Cities Service et al, Pulliam "C" 2, 110 ft e csl sw nw se 33-19-9w	*	3424
Schneider et al, Gum 1, c e½ ne ne 34-19-10w	360	3290
Russell County—		
Coralena, Erlich 1, ne se sw 19-14-13w	2662	2982
Shields, Shaffer 1, nec se 34-14-13w	511	2870
Shell, Dumler 1, se ne nw 24-14-14w	*	3194
Stanolind, Frederick-Michel "B" 1, c w½ nw nw 35-14-14w	770	3156
Phil-Han et al, Mills 1, se sw sw 12-14-15w	938	3165
Haynes et al, Maag 1, nw sw sw 7-15-13w	*	2120
Skelly, Rein 8, c w½ nw sw 8-15-13w	1251	3003
Cities Service, Tittle "C" 4, nwc 13-15-14w	1087	3332
Stafford County—		
Cities Service, Smith "B" 2, se nwc se 16-21-11w	148	3414
Trigg et al, Teichmann 2, csl se ne se 35-21-12w	*	3597
Landon et al, Equitable Life 1, c e½ ne ne 15-24-11w	798	3816

North Louisiana

Caddo Parish (Pine Island)—

Company, Well and Location	Init. Prod. Bbls.	Depth
Mrs. O. P. Clement, Caddo Levee Board B-2, 5-20n-16w	3	2305
Ferguson & Page, Pala. Oil Co. 3, 1-20n-16w	125	1485
Galbraith & Mealey, Raines 19, 22-21n-15w	80	1616
Magnolia, Dillon 29, 24-21n-15w	26	1675
J. F. Meechom, Crystal Fee 2, 12-21n-16w	¶5	2283
J. Ray Murray, Slattery 1, 21-21n-15w	25	1700
Stanolind, Dillon Hrs. 131, 14-21n-15w	¶1½	11,419
Morehouse Parish (Monroe)—		
Union Producing Co., Tensas Delta A-1, 8-22n-4e	¶2½	10,475
Sabine Parish (Zwolle)—		
Whitehurst Drlg. Co., O. V. Summers 1, 14-7n-13w	100	2581

South Louisiana

Anse La Butte—

Company, Well and Location	Init. Prod. Bbls.	Depth
Glassell & Glassell, Breaux 1	125	4650
Barataria—		
Gulf, Rathborne 1	624	8210
Baton Rouge—		
Wm. Helis, Duplantier 4-B	253	6498
Bayou Blue—		
Superior, Schwing 1	256	5030
Chacahoula—		
Sun, Dibert-Stark-Brown, 6	519	7290
Eola—		
Amerada, Figlio 1	276	8576
Sellers 1	314	8577
Golden Meadows—		
Berkshire Oil Co., Nicol 1	126	2680
Taylor Fithian, Martin 1	*	....
Martex Oil Co., Rebstock 1-B	240	5261
Marr et al, Terrebonne 3	123	5500
Texas Co., Falgout Holding 9	397	5175
Falgout Holding 10	341	7940
LaTerre 4	65	2683
Grand Bay—		
Gulf, Grand Prairie 6-A	1062	10,453
Jennings—		
Stanolind, Crowley Oil & Mining Co. 116	284	7323
New Iberia—		
The Texas Co., Duke 14	389	5989
Potash—		
Humble, Orleans Levee Board 41	*	4742
Quarantine Bay—		
Gulf, Orleans Levee District 4-A	355	8256
Roanoke—		
Humble, Kratzer 7 (wo)	336	7945
Ville Platte—		
Continental, Fontenot 5	411	8996
Opelousas 6	250	9060

Michigan

Allegan County—

Company, Well and Location	Init. Prod. Bbls.	Depth
H. H. Heinig, Miller 1, c s ne ne 17-3n-13w	20	1661
Jacob Bolema, Brower 2, sw nw ne 34-4n-14w	225	1451
Redman Oil Co., Costen 2, sw se nw 34-4n-14w	1700	1448
Socony Vacuum, Twining 4, nw se se 3-4n-13w	40	1627
Arenac County—		
Don Rayburn, Dergern 2, c se ne 15-20n-4e	¶12½	1277
Clare County—		
Pure Oil Co., Petroweeheff 2, c s sw nw 34-19n-6w	250	3931
Isabella County—		
Cryden Pet. Corp., Morrison 1, ne nw se 29-16n-3w	*	3746
Kent County—		
Smith Pet. Corp., Milan 1, n sw se 28-7n-12w	35	1938
Wolverine, Burgess 2, sw ne ne 32-7n-12w	50	1945
Voorhees Dr. Co., Marvel 1, nw nw se 3-6n-12w	25	1789
Monroe County—		
Clark & Johnson, Osterhout 1, se nw nw 30-6s-6e	50	2089
Vanco Oil Co., Montry 1, nw ne nw 31-6s-6e	200	2104
Montcalm County—		
Belvidere Oil Co., Curtis 1, nw se ne 21-12n-6w	¶8½	1295
E. C. Daily, Church 1, sw sw nw 17-12n-5w	¶6	1215
Newaygo County—		
Art Hansen, Wolford 1, se nw nw 32-13n-14w	*	2165
Ottawa County—		
Twin Dr. Co., McKay B4, se nw sw 24-7n-13w	100	1908
McKay-Ginrich 1, c n n ne 26-7n-13w	85	1870
Muskegon Dev. Co., Wright 1, nw sw ne 24-7n-13w	*	2011
George Kernodle, Snip 3, se ne nw 25-7n-13w	90	1874
Freman Oil Co., Van Farowe 1, sw se ne 5-5n-14w	*	1708
Tuscola County—		
F. N. Boswell, Keyser 1, sw nw sw 19-14n-8e	30	3481
Van Buren County—		
J. B. Reed, Cooley 3, sw se se 14-1s-15w	40	1178
Lewis Petersen, Fee 1, nw sw se 14-4s-13w	*	1220

Mississippi

Yazoo County (Tinsley Dome)—

Company, Well and Location	Init. Prod. Bbls.	Depth
Hassie Hunt, Fair 1, 13-10n-3w	850	4750
J. C. Johnson 3, 11-10n-3w	500	4900
Union Producing Co., Stevens 4, 12-10n-3w	500	4824

Missouri

Knox County—

Company, Well and Location	Init. Prod. Bbls.	Depth
Oberithier et al's Campbell 1, c ne 18-61n-12w	*	934

New Mexico

Chaves County (Wildcat)—

Company, Well and Location	Init. Prod. Bbls.	Depth
Sam Sanders et al, fee 1, c se nw 25-15s-29e	*	3330
Eddy County—		
Carper Drl. Co., Blake 2, ne sw se 31-16s-29e	¶1	2487
Franklin Pet. Corp., Coppedge 1, nw sw nw 5-18s-30e	*	3453
Eddy County (Wildcat)—		
Plains Dev. Co., Massie 1, c sw sw 27-18s-29e	*	3245
Lea County (West Eunice)—		
Wilson Oil Co., State-Shell 3, c lot 3, 7-21-35	310	3808
Lea County (Langlie)—		
Skelly, State 2-L, sw se nw 2-25s-37e	168	3421
Lea County (Lovington)—		
Tidewater Associated, State 1-M, near c ne se 36-16-36	70	5068
Lea County (Maljamar)—		
Barefield-Phipps Oil Corp., Walker 1, c se ne 5-18s-32e	45	3724
Lea County (Mattix)—		
Continental et al, Jack 8-B-27, c w½ ne ne 27-24-37	648	3538
Lea County (Monument)—		
Guy Hooper et al, Record 1, ne se ne 15-20-36	*	1301
Lea County (Rhodes)—		
Texas Co. et al, State 1-Y, near c w½ se ne 16-26-37	¶16.4	3140
Lea County (Vacuum)—		
Humble, State 14-K, c nw sw 28-17s-35e	480	4650
Magnolia, State-Bridges 52, c ne ne 27-17s-34e	216	4640

Ohio

Athens County—

Company, Well and Location	Init. Prod. Bbls.	Depth
McBill Oil Co., Burson 2	¶.03	1645
Guernsey County—		
Jewell Oil Co., Cubbison 1	¶.13	1329
Ohio Fuel Gas Co., Webster 1	¶.05	1698
Licking County—		
Ohio Fuel G. Co., Wilson 2	¶.80	2595
Medina County—		
Marine Trust Co., Packard A1	5	362
Ripley A9	5	440
Ross A16	5	390
Shaw A9	5	355
Monroe County—		
Hanlon & Schoy, Amos 6	10	859
Noble County—		
Skinner Co., Brown 3	1	1676
Ohio Fuel G. Co., Wyscarver 3	¶.67	1700
Summit County—		
Lorentz Bros., Lorentz 1	10	976

Oklahoma

Caddo County—

Company, Well and Location	Init. Prod. Bbls.	Depth
G. Pace Davis 1, nw se nw 6-5n-9w	30	3305
Carter County—		
Jones Oil Co., Okla-Dillard 4, sw nw sw ne 22-4s-2w (otd 1563 ft)	30	3003
Sinclair Prairie, Richards 14, c se nw 9-4s-3w	*	1065
Comanche County—		
McKey, Truitt 4, nw nw sw se 26-2n-11w	*	230
Cleveland County—		
Sinclair Prairie, Ward 1, sec 30-7n-1e	*	8332
Creek County—		
Young et al, Allen 1, 130 ft s c s½ sw ne 1-15n-9e	22	2865
Kaplan, Long 1, nwc se 12-15n-9e	*	3406
Curtis Oil Co., Newton 4, nw ne se 2-16n-11e	*	2697
Green, Willibey 1, swc 6-17n-10e	*	825
Garfield County—		
Hughes Drilling Co., Looman 1-A, 110 ft e nec se 9-20n-4w	12	5519
Hughes County—		
Melton et al, Jackson 1, c s½ nw ne 5-8n-10e	*	3543
Jackson County—		
Henry et al, Miner 1, nwc 15-1n-20w	120	1519
Kiowa County—		
Phillips, Warner 2, nw ne se 19-7n-17w	1848	1130
Noble County—		
Phillips et al, Harbinson 3, nw sw sw 22-23n-2w	2788	5350
Okfuskee County—		
Parker Drilling Co., King 1-A, nec sw 2-11n-8e	20	3401
Suppes et al, Alexander 5, c nw ne 35-11n-9e (otd 450 ft)	25	1485
Oklahoma County—		
Kerlyn, Bradley 1, ne se sw 27-12n-3w	898	6567
Okmulgee County—		
K. B. K. Producing Co., Harris 1, se se nw se 19-13n-12e	¶1.25	2040
Osage County—		
Platter, 9, sec nw 30-22n-9e (Input well)		975
Pawnee County—		
Sand Springs Home, Stewart 1, swc se 10-20n-7e	*	2990
Jackson, Beaser 1-A, se sw se 24-20n-9e	7	1225
Atkinson, Wilkerson 1, nw ne nw 14-22n-4e	*	3620
Pontotoc County—		
Magnolia, Metropolitan Life 27, ne nw ne 27-2n-7e (otd 3771 ft)	120	2657
Gulf, Watson 1, se nw ne 35-5n-4e	475	2550
Pottawatomie County—		
Denver P & R Co., Houck 2, c n½ nw nw 1-6n-4e	250	4143
Ray 2, ne sw ne 2-6n-4e (otd 4030 ft)	125	4298
Deep Rock, Mickish 1, nwc sw 36-10n-4e	252	4299
Seminole County—		
Viersen, Swan 1, nw se nw 28-6n-6e	*	3760
Deep Rock, Reed 1, nwc se 6-6n-8e	20	4224
Cities Service, Fish "B" 2, nw ne se 19-7n-8e (otd 3127 ft)	124	4161
R. Olsen, Burton 1-A, sw ne sw sw 28-9n-6e	*	3632
Stephens County—		
Gulf, McClure 2, c se ne 28-2s-3w	200	5548
Tillman County—		
I. T. I. O. Co., Graham 6, se ne ne 1-3s-19w	246	3125
Wagoner County—		
Enoch et al, Jones 1, sec sw 30-18n-18e	*	657

*Failures; †Junked; ¶Million cu. ft. gas.

United States Well Completions—*Continued*

Pennsylvania

Company, Well and Location	Init. Prod. Bbls.	Depth
Bradford District—		
D. D. Daly No. 2, Bing 468	2	....
Smith Newton Oil Co., Lincoln	4	....
W. A. Bolles, Baum	1	....
Tapp, Gallets & Buffington, Tres., fee	3	....
Jacob Meridan, Harbel & Meridan	8	....
Duffytown Oil Co., M. J. Sullivan	1	....
Penn Valley Crude Oil Corp., fee	3	....
Forest Petroleum Corp.	1	....
Niagara Oil Corp., 3 wells	3	....
Bradford Transit Co., 10 wells	10	....
Bradford District (Water Intake Wells)—		
N. V. V. Franchot, Mgr. Trustee, Campbell	..	....
Forest Oil Corp., 2 wells	..	....
Niagara Oil Corp., 4 wells	..	....
Middle District—		
Slicker, Lewis et al, McLaughlin	¶	....
Butler Armstrong District—		
A. & J. F. Seybert, Seybert	2	....
New York-Pennsylvania Gas Field—		
G. L. Cabot, Inc., Ella Ransome 1	*	....
Allegany Gas Co., Cobb, et al	*	....
New York State Natural Gas Co., G. R. Cady	*	....
Van Bilder, F. Rigby	*	....
Belmont Quad. Dr. Co., B. Healy	*	....
Cunningham Nat. Gas Co., Hart 2	¶	....
Belmont Quad. Dr. Co., Thomas	*	....
New York State Nat. Gas Co., Bennett	*	....
Coudersport Tr. Co.	¶	....
Belmont Quad. Dr. Co., Ackley	*	....
Bunker	*	....
SOUTHWEST PENNSYLVANIA		
Armstrong County—		
Equitable Gas Co., Raraigh 2	¶.04	3582
Fayette County—		
Duquesne Gas Co., Maldovan 1	¶.18	2410
Greene County—		
Union & Monongahela Gas Co., Barclay & Ross 1	¶3.00	1820
Manufacturers Lt. & Ht. Co., Tustin Hrs. 3584	¶.24	3390
Indiana County—		
T. W. Phillips G. & O. Co., Jewell 1	*	3548
Schroth 1	*	3404

West Texas

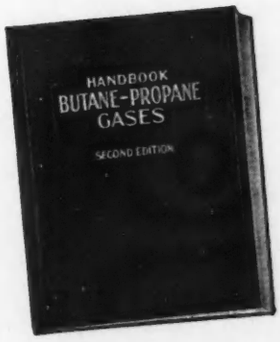
Company, Well and Location	Init. Prod. Bbls.	Depth
Andrews County (Means)—		
Humble, R. M. Means 24	1081	4505
Crane County (Sand Hills)—		
Humble, J. B. Tubb 34	343	4420
Ector County (Foster)—		
Atlantic, Foster 4	373	4200
Sinclair Prairie, Johnson 1-B	699	4151
Stanolind, E. F. Cowden 37-B	884	4220
J. E. Witcher 27	1367	4280
Ector County (Goldsmith)—		
Gulf, Goldsmith 242	3640	4176
Landreth Prod. Corp., Scharbauer 9-M	242	4173
Scharbauer-Humble 1-S	162	4183
Phillips-Pure, Cowden 71	1563	4171
Cowden 72	3743	4178
Cowden 74	3036	4166
Ector County (Jordan)—		
Shell, University 3-A	203	3668
University 5-E	1578	3653
Gaines County (Seminole)—		
Atlantic, Riley 2-A	849	5295
T. S. Riley 1-C	1011	5293
Gaines County (Wildcat)—		
Oil Well Drl. Co., Sikes-Humble 1	*	5001
Gaines County (Wasson)—		
Continental, Moore 5-45	667	5040
Hockley County (Slaughter)—		
Geo. P. Livermore, Glimp 1	891	5030
Loving County (Wheat)—		
Stevens & K. C. Portz, Chapman 1	46	4277
Mitchell County (Wildcat)—		
Sinclair Prairie, Erwin 1	*	3065
Scurry County (Sharon)—		
Helmerich & Payne, Martin 2	120	2501
Martin 3	100	2484
Ward County—		
W. A. Black & Son, Texas Cotton Ind. 4	196	1913
Gulf, E. W. Estes 128	816	2665
G. W. O'Brien 125	99	2870
McQueen & Clevenger, Sealy 4	2728	3067
Sinclair Prairie, Archenhold 22	316	3048
Archenhold 23	324	3025
Yoakum County (Wasson)—		
Aloco Oil Co., Wilder-Saltmount 4	1527	5165
Willard-Texaco 2-B	745	5208
Continental, Kendrick 1-867	800	5124
Helmerich & Payne, Inc., Bennett 1	314	5265
Honolulu Oil Corp., Kendrick 3-825	893	5150
C. Wilder 7-824	777	5158
Willard 6-741	1069	5215
Mabee O&G Co., Willard 21-741	1103	5195
Magnolia, Kendrick 13-825	141	5090
Oil Dev. Co. (Texas), Willard 2-761	1155	5200
Willard 9-803	1575	5200
Willard 11-803	1687	5200
Osage Drl. Co., Claywater-Amerada 4	421	5235
Shell, Baumgart 6-B	729	5188
Tidewater Associated, Kendrick 3-A	943	5130

East Texas

Company, Well and Location	Init. Prod. Bbls.	Depth
Joiner Area—		
Hunt Oil Co., Bradford 24-B (98.15-ac)	385	3676
Bradford 25-B (98.15-ac)	332	3668
Kilgore Area—		
T. P. Looney et al, M. Strong 3 (6.56-ac)	1200	3607
Overton Ref. Co., Butts 3 (36/100-ac)	720	3557
John Wrather et al, I&GN 7-A	800	3575
Joe King 1 (½-ac)	720	3657
Longview Area—		
Atlantic, Duncan 28 (154.7-ac)	3600	3778
Galvez Oil Corp., Holland 10 (45½-ac)	4000	3612
Anderson County (Long Lake)—		
FHE Oil Co. et al, F. H. Walsh (2.24-ac)	68	5356
Hunt Oil Co., Broyles-Wolverton 4	100	5377
Camp County (Wildcat)—		
Harry Moss-McGlothlin et al, Venters 1	*	7603
Franklin County (Talco)—		
Magnolia & Humble, Maxton 14	192	4310
Nacogdoches County (Wildcat)—		
Melrose Oil Co., C. N. Wilson 1	*	2100

*Failures; †Junked; ¶Million cu. ft. gas.

HAND BOOK



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North Texas

Company, Well and Location	Init. Prod. Bbls.	Depth
Archer County (Hull-Silk)—		
Chapman & McFarlin, Wilson 4-C	1104	4391
Cochran & Cain, Little 1	1632	4352
Deep Oil Dev. Co., Carson 1	720	4343
Dillard-White & Duncan, Nichols 1	1200	4385
Phillips Pet. Co., Little 2	776	4367
L. Sikes et al, Anderson 1-B	1044	4035
Southern Pet. Explor. Moss-Ligon 2-B	1112	4321
Thurmond & R. C. Lipscomb, Wilson 5	1052	3978
Archer County (K-M-A)—		
W. H. Hammon-Hanlon & Buchanan, Ferguson 8-B	960	3914
Archer County—		
W. B. Hamilton et al, Graham 5	*	5283
A. J. Ikard 14	*	1214
A. J. Ikard 3-C	*	2010
Perkins & Cullum, Abercrombie 22-C, sec 157	10	1018
Rathke Oil Co., Cowan 9, blk 15	7	1136
Archer County (Wildcat)—		
G. E. Kadane & Son, Hemmi-Conoco 1-B	*	4160
Clay County—		
E. N. Costley et al, Taylor 4-C, blk 41	296	1103
Duncan-Arnhold et al, Duncan 17	292	1165
J. A. Morgan et al, Brannon 2, blk 60	*	341
Brannon 3, blk 60	*	361
Brannon 4, blk 60	*	111
Clay County (Wildcat)—		
J. A. Coker et al, Henderson 1	*	1200
Cooke County—		
Bridwell Oil Co., Flusche 3-B	30	789
King Oil Co., Wiesman 4	9	768
W. H. Peckham et al, Meadors 3	86	1552
Cooke County (Walnut Bend)—		
Sun Oil Co., Snuggs 1	979	4917
Jack County—		
L. D. Thweatt et al, Prideaux 1	35	710
Jack County (Wildcats)—		
Buffalo Oil Co., Riddell 1	*	3265
Smith et al, 1st Nat'l Bank (Jacksboro) 1	*	650
Montague County (Bonita)—		
United Producers-Conoco, Custer 1-A	*	3809
Montague County (Nocona)—		
Wm. T. Payne et al, Wood 1	1640	4344
Wichita County (K-M-A)—		
J. E. Farrell & Co., Waggoner Bros. 26-C	688	3815
Hanlon & Buchanan, Fassett-Tuttle 6-E	390	4016
Southport Pet. Co., River 10-A	672	3915
Tide Water Associated et al, Ferguson 12	528	3870
Chas. Pettit 22	1200	3819
Mrs. H. B. Wallace et al, Logan-Deep 3-B	640	3863
Wichita County—		
L. V. Hull et al, Daume-Panhandle 6	48	696
Magnolia, Hugh Reilly 160	*	1518
Underwood Oil Co., Rogers 9	25	1207
Wilbarger County—		
Lawson & Leavell, Waggoner Est. 4-T, sec 103	*	1397
Young County—		
B. C. Gilmore et al, Watson 4, blk 22	7	584
E. W. Hunt et al, Gass 5, sec 1592	*	1275
R. J. Watson et al, E. N. Jordan 1, sec 244	*	725

West Central Texas

Company, Well and Location	Init. Prod. Bbls.	Depth
Brown County—		
McDonald-Campbell & Davis, Hill 4	*	1333
Callahan County—		
Lanning et al, Shroeder 1	*	1757
Coleman County (Wildcat)—		
Kynaston & Bozeman, McCord 2	*	2787
Eastland County—		
Holden et al, Nichols 1	*	3175
Jones County—		
Humble, Irwin 5	250	2389
Shackelford County—		
Hooker et al, Jones 1, sec 72	*	770

South Texas

CORPUS CHRISTI DISTRICT

Company, Well and Location	Init. Prod. Bbls.	Depth
Hidalgo County—		
Fohs, Sullivan 2 (Samfordyce)	*	3504
Jackson County—		
Magnolia, West 45-A (West-Vanderbilt)	1350	5134
Stanolind, Davis 1 (West)	1500	5795
Texas, Weed 2 (Francitas)	*	10,390
Jim Wells County—		
Kilgore, Mosser A-7 (Reynolds)	550	5620
Myers & Simons, Reynolds & Richardson 3 (Magnolia City)	¶1¾ & 43	5901
Live Oak County—		
Brauer, Holland & Smith, Bonham 9 (White Creek)	125	1542
Moore, Fee 1 (WC) 5 mi s of Simmons City	*	2788
Simmons, McGriff B-13 (Oakville)	350	2045
Nueces County—		
Gilcrease, Sullivan 1 (Saxet)	*	7515
Union, Sponberg 4 (Agua Dulce)	¶10 & 100	5121
Refugio County—		
Norsworthy, Fox 1 (WC) 4 mi sw of McFaddin field	250	6715
San Patricio County—		
Bay-Tex, Barry & Green 1 (McCampbell)	350	7230
Plymouth, Owens 4 (East White Point)	500	5671
Southern, Porterfield 2-A (McCampbell	550	7352
Victoria County—		
Barnsdall, Keeran Ranch 6 (Keeran)	325	7048
Loma, Schier 1 (Victoria)	*	2585
Pelley, Vogt 1 (Victoria)	*	2706

LAREDO DISTRICT

Company, Well and Location	Init. Prod. Bbls.	Depth
Brooks County—		
Humble, McGill 51 (Kelsey)	*	4808
Duval County—		
Blanchard, Ruiz 1 (WC) 2½ mi nw of Roseta	*	4505
Cox & Hamon and Gorman-Yoakam, Hoffman 2 (119) (Tarancahaus)	*	2078
Hoffman 1 (109) (Tarancahaus)	290	2043
Miller, Fee 19 (Longhorn)	500	4085
Jim Hogg County—		
Colorado Octane, Martinez C-2 (Colorado)	450	3038
McMullen County—		
Lynd, Worley 2 (Callihan)	..	1051
Starr County—		
Davis, Slick 2-A (Rincon)	¶3 & 46	5797
Sun, Speer 6 (Sun)	50	4969
Webb County—		
Arkansas, Adami A-6 (Adami)	43	978
Adami 7-A (Adami)	50	972
Adami B-3 (Adami)	34	997
Johnson, Adami 1 (Adami)	*	lcn
Magnolia, Benavides 21 (Volpe)	350	2479
Zapata County—		
Buffalo, Hinnant 24-C (Mirando Valley)	150	1991
Graham, Garza 1 (WC) 3 mi ne of Escobas field	*	2260

SAN ANTONIO DISTRICT

Company, Well and Location	Init. Prod. Bbls.	Depth
Caldwell County—		
Black, Starcke 1 (WC) (Larremore)	*	3370
Guadalupe County—		
Holifield, Day 1 (WC) 2 mi se of Luling	150	2830
Magnolia, Knodel 7 (Darst Creek)	60	2625
Williamson County—		
Silverthorne, Zeischang 1 (Byersville)	*	995

Texas Gulf Coast

Company, Well and Location	Init. Prod. Bbls.	Depth
Ace—		
Peyton Brothers, Kirby West C-2	*	7919
Anahuac—		
Humble, Tyrrell 28	75	7085
Chocolate Bayou—		
Glenn H. McCarthy, Houston Farms Dev. 1	22	10,381
Clear Lake—		
Humble, Humble-West Fee C-30	324	5908
Humble-West Fee C-32	348	5906
Humble-West Fee C-2	¶1	6839
Conroe—		
Strake, Krohn B-10	10	5057
Esperson—		
General Crude, Fee 7-B	371	7528
Fairbanks—		
Amerada-Stanolind, White 13	115	6845
Williams et al, Wright Land 1	*	6834
Friendswood—		
Humble, Beamer 33	537	6043
Beamer 39	475	6050
Kiesling & Dixon 15	514	6040
West Prod. Co., 22	536	6045
Hardin—		
Humble, Partlow A-14	292	7663
J. R. Nowery, Humphreys 1	83	7589
Pan American, Smith & Richard 1	208	7643
Hastings—		
Stanolind, Resott B-3	*	6190
Hull—		
H. Mecom, Merchant 1	37	4412
League City—		
Phillips, Brittmacher 1	156	10,348
Lovall Lake—		
Humble, Steinhagen 3	159	7725
Markham—		
Powers Prod. Co., Myers 5-B	85	3560
Red Bank, Smith 3	*	1325
Pierce Junction—		
Rio Bravo, Settegast A-36	199	4625
Thompson—		
J. H. Blaffer, Davis 6	442	5382
Quintana, Wolters B-3	292	4316
San Felipe—		
Hunter & Mayo, Rheman 1	*	6005
South Bay City—		
Hamman Expl. Co., Slone 5	191	8925
Spindletop—		
F. H. Sheffield, Rowe 1	13	951
West Columbia—		
Texas Co., Abrams 35	218	5240
Harris County—		
T. A. Carlton, Sweeney 1, w of Fairbanks, J. J. Sweeney sur	*	7011
Carpenter Dr. Co. et al, Grisbee 1, Ogburn area, J. Picture sur	*	7020
Matagorda County—		
Gulf Stream, Zyprian 1, n of Matagorda, L. Lassassier sur	*	4060
San Jacinto County—		
Harrison & Abercrombie, Lockin 1, Sheppard area, W. Hay sur	*	8598

Texas Panhandle

Company, Well and Location	Init. Prod. Bbls.	Depth
Gray County—		
Shell, Finley 5	313	3144
Hutchinson County—		
Texas Co., Pond 17	314	3080
Sherman County (Wildcat)—		
I. T. I. O. Co., Bryant 1	†	2739

West Virginia

Company, Well and Location	Init. Prod. Bbls.	Depth
Cabel County—		
R. H. Adkins, Sidebottom 1	¶.20	2109
Calhoun County—		
Schroeder & Hack, Fee 1	3	1820
Clay County—		
W. E. McKnight, Smith 1	10	1450
Gilmer County—		
Norman & Jones, Matthews 1	¶.50	1813
Pitts. & W. Va. G. Co., Davis 7721	¶.04	2174
Kanawha County—		
Brawley-Reid G. Co., Jordan 1	¶3.55	4997
Marshall County—		
Orndoff et al, Harviston 1	¶.20	1800
Pleasants County—		
H. F. Simonton et al, Simonton Hrs. 1	¶.50	1815
Wetzel County—		
Pitts. & W. Va. G. Co., Hibbs 5395	¶.30	3384

Wyoming

Company, Well and Location	Init. Prod. Bbls.	Depth
Big Horn County (Garland Field)—		
Mule Creek Oil Co., Sessions 1, sw nw nw 34-56n-97w	350	4155

*Failures; †Junked; ¶Million cu. ft. gas.

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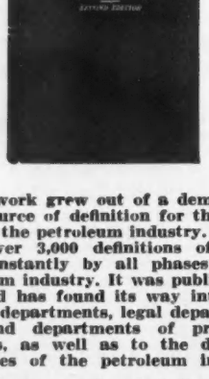

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Union County—Barnsdall Oil Co.'s Cameron 1, sw nw 36-19-17, top Smackover lime 9026 ft, dry abnd 9069 ft.

CALIFORNIA

FIRST REPORT

Kern County—Oil Scout, Inc., Tejon Minerals 1, 330 ft n, 330 ft e cel 27-32-29, Comanche Point area, lcn.

COMPLETIONS

San Diego County (Imperial Valley Area)—John F. Sheran's Sheran 1, abd 3118 ft.
Kern County (Edison Area)—H. L. Whiston's Wasem 1, abd 3990 ft.
San Benito County (Los Pinos Creek Area) Consolidated Petroleum's No. 1, abd 2007 ft.
San Luis Obispo County (Elkhorn-Carriza Area)—Newton Dev. Co.'s Stafford 1, abd 5285 ft.

ILLINOIS

FIRST REPORTS

Cass County — Cass Community Oil Co.'s Maslin 1, nw se se 2-17n-10w, dr.
Clark County—Kingwood Oil Co.'s Booth-Poorman 1, sw nw ne 17-11n-14w, rig. National Consumers Oil Co.'s Harper 1, c s½ se ne 6-11n-14w, sp.
Crawford County — LaSalle Drilling Co.'s Berryhill 1, ne ne nw 9-6n-13w, sp.
Fayette County—Roy E. Wilson's Snodgrass 1, ne sw se 34-6n-2e, rig.
Macon County—Eureka Oil Corp.'s W. F. Rhodes 1, sw sw nw 28-17n-3e, rig.

COMPLETIONS

Bond County—R. E. Jones' Huber 1, ne nw nw 28-6n-4w, Shoal Creek tnp, top Lower Mississippian 785 ft, abnd 1450 ft.
Coles County—L. Trulock's Fee 2, se ne se 18-12n-14w, Ashmore tnp, abnd 505 ft.

KANSAS

FIRST REPORTS

Butler County—Parks' Columbian 1, nwc sw 12-25-7e, cellar.
Greenwood County—Marylyn Oil Co.'s Burke 1, nec sw 27-24-11e, sd 40 ft.
Sedgwick County—Sunray's McMillan 1-A, cwl nw nw 14-29-2w, rur.

COMPLETIONS

Cowley County—Mitchell Drilling Co. et al's Batchelder 1, cel sw 27-30-6e, 2 mi ne Eastman pool, top Kansas City 2163 ft, top Mississippi 2884 ft, top Arbuckle lime 3320 ft, abnd 3350 ft.
McPherson County—Central Petroleum Co. et al's Swanson 1, c n½ nw nw 18-20-5w, North Bornholdt pool discovery, top Mississippi 3304 ft, td 3348 ft, 1383 bbls, gr. 39.

SOUTH LOUISIANA

FIRST REPORTS

Jefferson Davis Parish—Union Sulphur's Sanson 1, China area, 330 ft s and 330 ft w of nec sw¼ nw¼ Sec 35-7s-4w, lcn.
St. Mary Parish—Joe Doninque's Allain 1, West Charenton area, 2640 ft ne along sec line from swc Sec 46, thence 76 ft at right angles in Sec 46-13s-9e, lcn.

COMPLETION

Wm. Helis' Martin 1, Section 28 dome, 1000 ft s and 100 ft w of nec 32-9s-7e, abnd 1181 ft.

MICHIGAN

FIRST REPORTS

Allegan County — Q. DeVries Trustee's Hutchins 1, nw ne sw 2n-16w, rig.
Barry County—Virgil Kirkham's Vosburgh 1, nw nw sw 20-1n-8w, dr.
Clare County—Union Drilling Co.'s Riggs 1, sw se 11-19n-4w, lcn.
Ottawa County—H. E. Fowler's Albrecht 1, nw sw nw 8-5n-13w, dr.
Oceana County—C. W. Teater's Cartier 1, sw sw 31-16n-15w, dr.
Van Buren County—Fortney Oil Co.'s Ingels 1, sec 1-3s-15w, dr.

COMPLETIONS

Newaygo County—Art Hansen's Wolford 1, se nw nw 32-13n-14w, Traverse 2143 ft, td 1865 ft, abnd.
Van Buren County—Lewis P. Petersen's Fee 1, nw sw se 14-4s-13w, Traverse 1147 ft, td 1220 ft, abnd.

MISSOURI

COMPLETION

Knox County—Oberithier et al's Campbell 1, c ne 18-61n-12w, se of Kirksville, top Hunton 575 ft, abnd 934 ft.

NEBRASKA

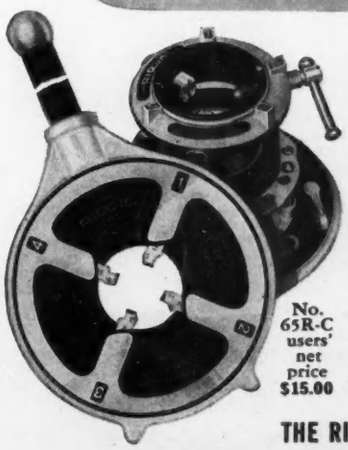
FIRST REPORTS

Morrill County—Nebraska Oil Co.'s Bonnerland 1, sec 10-23n-49w, dr. 1100 ft.
Richardson County—E. V. Jackson et al's Hill 1, c nw sw 32-2n-16e, lcn.

NEW MEXICO

COMPLETIONS

Chaves County—Sam Sanders et al's fee 1, c se nw 25-15s-29e, elev 3911 ft, sul water 3820-30 ft, abnd.
Eddy County—Plains Dev. Co.'s Massie 1, c sw sw 27-18s-29e, elev 3451 ft, abnd 3245 ft.



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OKLAHOMA

FIRST REPORTS

Atoka County—Brookshire et al's Jones 1, c sw nw 29-3s-12e, dr.

McIntosh County—Acme Drilling Co.'s Reynolds 1, nec sw 22-11n-14e, lcn.

Pontotoc County—Starr Oil and Gas Co.'s Bowlby 1, swc nw 29-5n-4e, dr.

NORTH TEXAS

FIRST REPORTS

Archer County—D. R. Criswell et al's A. C. O'Donnell 1, 775 ft from s and 3405 ft from e lines blk 14, Crawford subdiv of I. Holman sur, dr 160 ft.

Clay County—L. T. Burns et al's Tom Watson 1, 330 ft out of nec sw¼ sec 2639, TE&L Co. sur, lcn for 5000-ft test.

Cooke County—Mudge Oil Co.'s S. L. Seagraves 1, 330 ft from n and 401 ft from w lines O. M. Gray sur A-415, mim for 2000-ft test; Bonner-Whatley 1, 330 ft out of sec lease, A. Emanuel sur A-1196, rur.

COMPLETIONS

Archer County—W. B. Hamilton Pet. Co.'s C. E. Graham 5, 4700 ft s and 660 ft e of nec Green 1290-acre tr, J. Levins sur, but in S. Abercrombie sur A-1249, top Caddo lime 4755 ft, top lime 5210 ft, top Chappell lime 5276 ft, abnd 5283 ft. G. E. Kadane & Sons' Jos. Hemmi-Conoco 1-B, 1394 ft from n and 330 ft from e lines lot 61, blk 3, Clark-Plumb sur, abnd 4160 ft.

Clay County—J. A. Coker et al's W. A. Henderson 1, 2450 ft east and 2300 ft s of nwc of S. Hernandez sur A-185, abnd 1200 ft.

Jack County—Buffalo Oil Co.'s E. C. Riddle 1, 1250 ft from s and 330 ft fr e lines S. L. Clark sur A-1944, Home Creek lime 224-33 ft, abnd 3265 ft. Smith et al's First Nat'l Bank (Jacksboro) 1, 150 ft from s and 2250 ft from e lines H&GN sur A-296, abnd 650 ft.

WEST TEXAS

COMPLETIONS

Gaines County—Oil Well Drl. Co.'s R. E. Sikes-Humble 1, c se se PSL sec 10, blk A-25, elev 3364 ft, top anhydrite 1920 ft, top salt 2040 ft, top Yates 3010 ft, top frosted grains 3050 ft, top brown lime 4170 ft, abnd 5001 ft.

Mitchell County—Sinclair Prairie Oil Co.'s E. E. Erwin 1, nwc H&TC sec 1, blk 25, elev 2302 ft, top anhydrite 705 ft, top salt 762 ft, top lime 2049 ft, 1st salt w 3007 ft, abnd in sul w 3026-65 ft.

Yoakum County — Atlantic-Sloan & Zook Co.'s J. E. Fitzgerald 1, sec sec 22, blk D, J. H. Gibson sur, elev 3617 ft, deepened from 5150 ft to 5658 ft and abnd.

WEST CENTRAL TEXAS

FIRST REPORTS

Brown County—A. M. Stalcup et al's J. C. Morris 1, 700 ft from e and 900 ft from s lines 136-acre tr, John Goodwin and W. B. Hester surveys, lcn.

Callahan County—L. A. Warren et al's A. J. Pope 1, 220 ft out of nwc C. K. Loggins sur, sec 12, A-268, lcn for 1800 ft test.

Coleman County—Radford & Robertson's J. P. Morris 1, 330 ft out of nwc east 80-ac of w½ GH&H sec 176, blk 2, 3600-ft rotary test.

COMPLETION

Coleman County — Knyston & Bozeman's McCord 2, J. W. Meek sur, abnd in hfw 2783-87 ft.

EAST TEXAS

COMPLETIONS

Nacogdoches County—Melrose Oil Co.'s C. N. Wilson 1, 250 ft from s and 1530 ft from e lines of J. Hall Survey No. 265, 10 mi se Nacogdoches, elev 371 ft, abnd 2100 ft.

Harrison County—M. & H. Oil Co., Vaughan 1, A. P. Hope Survey, abnd 2360 ft.

TEXAS PANHANDLE

COMPLETION

Sherman County—I. T. I. O. Co.'s Bryant 1, c nw T&NO sec 369, blk I-T, elev 3636 ft, junked 2739 ft, skid rig for Ordovician test.

SOUTH TEXAS

FIRST REPORTS

Caldwell County—Roy B. Campbell and King Cailville's Frances Zedler 1, ¾ mi se of Day discovery well, lcn. Duke C. Matthews' J. W. Miers 1, 10-ac tr, William Leach Survey, lcn.

Duval County—Magnolia Petroleum Co.'s A. Weil 1, ½ mi sw Hoffman field, moving on.

Guadalupe County—Pat Armstrong's Neighbors & Muellar 1, Nigger Hill field, spudded. C. W. Matheny's J. Shackel 1, sw of Day discovery well, lcn. Fred W. Nute's M. T. Howell (Christie), 231-ac tr J. C. Darst Survey, 2½ mi sw Nash Creek field, preparing to move in. Wellington Oil Co.'s K. L. Beaty 1, H&TC 10, 12 mi se of Seguin, rigging up.

Jackson County—H. J. Porter's Hill 1, 255-ac tr J. Kerr Survey, ½ mi nw of Jackson Bank 1, 3 mi sw Cordele field, spudded.

Jim Hogg County—Locke Purnell's S. K. East 1, Survey No. 619, 5 mi ne Randado, 15 mi s of Hebbronville, rigging up for 3250-foot test.

Karnes County—G. C. Ruhmann's V. M. Butler 1, George Elliot Survey, lcn.

Lee County—Fred Pederson's Oscar Brown 1, 201-ac tr D. Hudson Survey, 2 mi s Tanglewood, reinstated now drilling below 7340 ft.

Live Oak County—Pocono Development Co.'s San Antonio Land Bank 1, blk 27, C. R. Tips subdivision Richard Everett Survey A-7, 2 mi nw Three Rivers, lcn.

McMullen County—Marshall Purvis and William Appell's Nueces Land and Livestock Company 1, e ½ se HT&B Sec 26, 7 mi n Munson field, lcn.

Nueces County—Shield Oil Co.'s Nichols 1, Block 4, George H. Paul subd, 100-ac tr of Driscoll Ranch, J. L. Herrera Survey, Robstown area, spudded.

Webb County—Continental Oil Co.'s A. M. Bruni Estate 1, Survey 600, 1 mi sw Aguilares, lcn. M. L. Massingill's J. H. Kirkpatrick 1, Survey 321, Block 1, lcn. Mayfair Oil Corp.'s A. M. Bruni Estate 1, Survey No. 446, lcn.

Zapata County—Sory et al's, A. M. Bruni Estate 1, Blk 25, Blas Uribe tr, J. V. Barrego gr, dr 876 ft.

Caldwell County—John R. Black's Ed Starcke 1 (Larremore) Cornelius Crenshaw Survey, abnd 3370 ft in Trinity sand.

Duval County—J. B. Blanchard's Ruiz Estate 1, 2½ mi nw of Roseta, abnd 4505 ft.

Guadalupe County—A. J. Holifield's Day 1, 2 mi se of Luling heading about 20 bbls oil in 1 hr after treating with acid, well shut in preparatory to erecting storage and setting up pumping rig.

Live Oak County—Moore Development Co.'s Fee 1, 5 mi s Simmons City, abnd 2788 ft.

Refugio County—Norsworthy Prod. Co.'s Fox 1, 4 mi sw of McFaddin field, 81 bbls 40.6-gr, 3/32-in choke, 1025 lbs tubing pressure, 2310 lbs casing pressure. Perforated 5895-98 ft, gas-oil ratio 445 to 1.

Zapata County—S. H. Graham's Garza 1, 3 mi ne of Escobas field, abnd 2260 ft.

TEXAS GULF COAST

FIRST REPORTS

Brazoria County—Titantic's Poole 1, flank Allen dome, 55 ft fr s and 1187 ft fr e line of 285.75-ac tr, T. W. Alley Survey, lcn.

Montgomery County—Dick Schwab, Womack & Sturm's Foster Estate 1, Willis area, 466 ft fr n and w lines of 160-ac tr, De La Garza Survey, lcn.

Wharton County—Magnolia's Swanson 1, 466 ft fr s and w lines of sec 39, E. T. R. R. Survey, lcn.

COMPLETIONS

Harris County—T. A. Carlton's Sweeney 1, w of Fairbanks, 330 ft fr s line and 375 ft fr e line of 213-ac tr, J. J. Sweeney Survey, abnd 7011 ft. Carpenter Dr. Co. et al's Grisbee 1, Ogburn area, in w½ of 160-ac tr in J. Picture Survey, abnd 7020 ft.

Matagorda County—Gulf Stream's Zyprian 1, n of Matagorda, 1360 ft fr n line and 1700 ft fr e line of lease, L. Lassassier Survey, abnd 4060 ft.

San Jacinto County—Harrison & Abercrombie's Lockin 1, Sheppard area, 467 ft w of w line of A. Carr 100-ac tr, 467 ft s of n line of H. H. Lockin tr, Wm. Hayes Survey, abnd 8598 ft.

Michigan orders effective without commission approval

Attorney General Thomas Reed of Michigan has ruled that proration orders issued by the supervisor of wells under Michigan's 1939 oil control law need not be submitted to the State Conservation Commission for approval to become effective.

ACIDIZING HAND BOOK

By BENSON M. KINGSTON

A timely, thoroughly practical book on a most important subject

Acidizing Hand Book takes up the purpose of acidizing, gives full information on formations which are treatable, tells how to determine treatability of formations, how to prepare a well for acidizing, and contains a section of tables extremely valuable to an operator planning to acidize a well.

The book is divided into 14 chapters which include:

Chemistry and Geology of Treatment—Treatment Acid—Preparation of Wells for Treatment—Mechanics of Treatment (4 chapters)—The Reaction of Salt Water to Treatment—Producing the Well After Treatment—Acidizing Gas Wells—Re-treatment and Multiple Stage Treatment—Other Uses of Muriatic Acid in the Field, and Computations in Acidizing.

The author has had many years of experience in practical work acidizing wells.

The Acidizing Hand Book has a Fabrikoid binding, size 5½ x 8 inches, and contains 78 pages.

PRICE $1.50, POSTAGE PREPAID

Address Book Department

Gulf Publishing Co., Houston, Texas

NOTES FOR THE
Equipment Buyer and User

Wall Cutter
MacCLATCHIE MANUFACTURING COMPANY

MacClatchie Manufacturing Company, California, has announced development of the MacClatchie Three-Cone Wall Cutter, especially made for enlarging the hole below the shoe to facilitate running pipe, cementing, and performing other well-completion operations. Its cutting speed is three to four times faster than other tools of this type.

MacClatchie Wall Cutter.

Similar in cutting action to a roller bit, this tool starts a formation shoulder around the circumference of the hole, rides on top of it and cuts the formation completely away, increasing the diameter of the hole two inches. Completely stabilized and centered, the cutter smoothes out irregularities in the wall of the hole and removes formation broken by the drilling bit. The two-inch increase in diameter obtained is ample to make liner setting, cementing, etc., easier and quicker.

The three-cone cutter consists essentially of three arms equally spaced on the body, with a rock bit cutter on the end of each. Circulation ports behind the cutters and through the tool keep the cutters clean and permit full circulation to be maintained. When starting in the hole, the arms are contracted by means of a special compression collar that automatically comes off when the tool is run into the casing. The tool can be rotated or raised up the hole while running in without harming the casing.

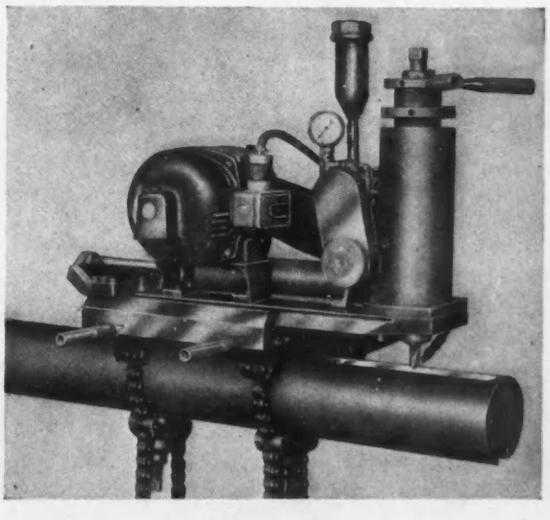
The instant the cutter passes through the shoe the arms expand. As rotation is begun the cutters quickly start a shoulder around the circumference of the hole. The tool rides on top of this shoulder, cutting it completely away and enlarging the hole two inches over its original size. When the tool is started out of the hole, the arms are again contracted into the recesses in the body as they contact the casing shoe. The MacClatchie cutter is made in a wide range of popular sizes.

Portable Keyway Cutter
SHULL PERFORATING COMPANY

Shull Perforating Company, 2746 Cherry Avenue, Los Angeles, has designed a portable keyway cutter and milling machine to eliminate the necessity of disassembling heavy machinery, such as drawworks and engines, to cut a new keyway.

The tool can be transported from lease to lease, and any shaft can be rekeyed without removal from the machine or engine. It has a hydraulically-operated feed with precise control so that extreme precision can be obtained to very close tolerance. Not only will it cut keyways, but its universal feed permits use as a milling machine and for cutting slots in pipe, for routing and for drilling holes.

The tool is self-contained, compactly designed and easy to lock in position. It is equipped with a pressure cylinder, pressure pump with automatic cut-off and a one horsepower motor for connection with cord and plug to any light socket. The traveling base on which the various units are mounted is made of fine semi-steel, accurately milled, with traveling ways precision-machined. The entire assembly can be conveniently lifted by two men and placed on a shaft to which it is locked with a double chain binder. Any size of drill up to one inch or cutter can be inserted in the chuck. Two operating levers are used for hydraulically controlling the longitudinal and cross feeds. The vertical feed is by hand. After rigging up, it requires only 30 minutes to reslot a 12-inch keyway. With a maximum feed length of 14 inches, cross feed of 12 inches and a vertical feed of 4 inches, this tool can perform practically any milling operation desired on a lease.



Shull Keyway Cutter

Collar Leak Clamp
M. B. SKINNER COMPANY

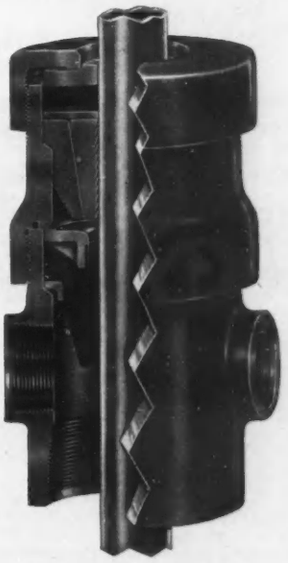
An improved collar leak clamp has been announced by M. B. Skinner Company, 3502 West Sample Street, South Bend, Indiana.

The sealed gasket principle is retained in the new design, but the clamp has been made heavier and simplified for easier application. The gasket ring now is equipped with bolts instead of cap screws. The gasket container bolts are the same size as the pull bolts. A socket wrench for applying the clamps is furnished with each carton of three clamps.

Tubing Head
LARKIN PACKER COMPANY

Larkin Packer Company, 6200 Maple Avenue, St. Louis, Missouri, has announced a new interchangeable tubing head with several unusual features in design and assembly.

Made available in five basic types, the heads are so constructed that all parts for one will fit any other. The head body can be threaded for either



Larkin Tubing Head

5½-inch O.D. or 7-inch O.D. casing, and all parts of heads threaded for 5½-inch O.D. can be used on heads threaded for 7-inch O.D. Internal construction is such that the inside diameter is the same as that of the pipe on which head is run so that any packer or tools that will run in the pipe will go through the head.

Model SR has blowout preventer for high pressure work; Model R is a regular slip-type head for low pressure or pumping wells; Model M is a mandrel-type head; Model FR is a flanged slip-type head, and Model FM is a flanged mandrel-type head.

All models are supplied ready for use with choice of internal parts for

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In Many of the Leading Oil Tools, Including

ABERCROMBIE

Shear Relief Valves

The tremendous responsibility placed upon Abercrombie Shear Relief Valves, manufactured by Abercrombie Pump Company, demands the highest quality mechanical rubber goods available.

Our modern facilities and factory-trained men are always ready to give you prompt, efficient service on highest quality mechanical rubber goods and synthetic oil-resisting products.

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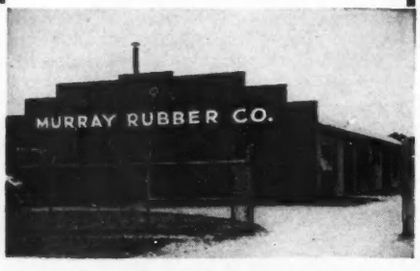
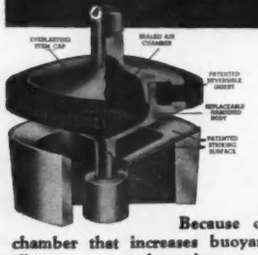


For Month In-Month Out Service

USE MacCLATCHIE "AIRFLOTE" MUD PUMP VALVES



Because of the sealed-in air chamber that increases buoyancy . . . cuts fluid slippage . . . reduces impact . . . and gives more efficient valve action, MacClatchie "Airflote" Pump Valves insure superior performance and longer life under the toughest pumping conditions. Replaceable bodies, reversible inserts and everlasting stem caps give true MacClatchie economy.

MacClatchie "Streamlined" Pump Valves give you *high* quality at *lowest* cost! Of solid one-piece construction, they're streamlined at every point to assure unobstructed fluid flow. Valve Seats (interchangeable with "Airflotes") have 20% to 100% *more* striking surface than others, PLUS patented cross-bar construction.

All MacClatchie Valves are guaranteed against cutting out the pump. *See our representative or write direct to factory for details on this guarantee.*

MacCLATCHIE MANUFACTURING CO.
COMPTON, CALIFORNIA
Mid-Continent Distributor, HAKE TOOL COMPANY, Houston, Texas
Rocky Mountain Representative, E. C. DEGARDE, Casper, Wyoming
Foreign, GEORGE R. WOODS, 17 Battery Place, New York, N. Y.

NOTES FOR THE Equipment Buyer and User

either 2-inch or 2½-inch regular or EVE tubing. Models equipped to run 2-inch tubing can be adapted quickly and easily to run 2½-inch tubing by changing slips, slip bowl, stripper, packing or tubing hanger. A 2½-inch model can be reduced to run 2-inch by installing 2-inch parts.

The head and all parts, of forged steel construction, test to 4500 pounds cold hydrostatic pressure, providing a high safety factor.

Unitized Drill Stem

HUGHES TOOL COMPANY

The introduction of the Hughes Unitized Drill Stem to the drilling industry marks the successful culmination of more than three years of intensive development, according to Gordon Richmond, general sales manager of Hughes Tool Company, Houston.

Hughes Unitized Drill Stem

"The advent of deeper drilling emphasized the necessity for an improved connection between tool joints and drill pipe—one that would develop the maximum strength of both. In developing the 'Flash-Weld' method of attaching tool joints to drill pipe, Hughes Tool Company has eliminated pipe threads, and this 'Unitizing' has been accomplished without compromising in the physical properties that are best suited respectively for tool joint and drill pipe.

"Pipe of this construction is available from the various pipe mills, most of whom carry stocks at Hughes Tool Company plant for immediate delivery."

Prices and complete information on Hughes Unitized Drill Stem are shown in the 1940 catalog of Hughes Tool Company, which is now being distributed.

Steel Electrode

THE LINCOLN ELECTRIC COMPANY

The Lincoln Electric Company, Cleveland, Ohio, has announced Stainweld D as a new stainless steel for arc welding stainless steel of the 25 percent chromium, 20 percent nickel type. It may also be used for welding various stainless steels to mild steel, and for welding steels that are air hardening and cannot be heat treated after welding.

Drilling Line Handbook

Macwhyte Wire Rope Company, Kenosha, Wisconsin, has issued a handbook, "D-11 Macwhyte Wire Lines for Drilling," containing latest American Petroleum Institute specifications and recommended practices on wire rope. It includes tables and illustrations of wire lines used for rotary, cable tool and other operations.

Speed Reducing Units

Philadelphia Gear Works, Philadelphia, has issued a new 64-page catalog covering its line of single-, double- and triple-reduction herringbone speed-reducing units. It includes dimensional drawings of reducers and of a complete line of base plates.

Fisher Appointed Pittsburgh Manager for Frick-Reid

Frick-Reid Supply Corporation, Tulsa, has announced appointment of Frank M. Fisher as district sales manager in charge of its oil and gas field supply business at Pittsburgh.

The company also announced sale of its industrial supply business at Pittsburgh, and of its nipple manufacturing business at Neville Island, Pennsylvania. The purchaser is not affiliated in any way with Frick-Reid Supply Corporation.

Succop American Roller Bearing Sales Engineer at Houston

Announcement has been made of the appointment of Larry Succop as southwest sales engineer for American Roller Bearing Company, Pittsburgh. He will make his headquarters in Houston. A graduate of Shadyside Academy, Succop attended Yale University for two years and completed his engineering education at Carnegie Tech. He had been in the engineering department at the company's plant before going to Houston.

LARRY N. SUCCOP

NOTES FOR THE Equipment Buyer and User

Payne Named Kansas City Manager for American Meter Co.

American Meter Company has announced appointment of Calvin N. Payne as manager of its Kansas City office. He succeeds Eugene Metz, who died late in 1939.

Affiliated with the company for 18 years, Payne was in production and sales activities at the Metric Metal plant, Erie, Pennsylvania, for 10 years. He was later placed in charge of the Denver office. A graduate of Hill school, Pottstown, Pennsylvania, he attended Princeton University after service in the United States Navy.

Payne is a member of the American Gas Association, Midwest Gas Association and Missouri Utilities Association. His territory includes Missouri, Kansas, Nebraska, Colorado and adjacent areas of Utah, Wyoming and Montana.

CALVIN N. PAYNE

Timken Roller Bearing Company Announces Personnel Changes

The Timken Roller Bearing Company, Canton, Ohio, has announced several changes in its service-sales division resulting from the illness of J. W. Berriman, manager of the company's New York branch for the past seven years. Berriman is taking an indefinite leave of absence.

H. C. Sauer, who has been at Chicago for the past nine years, has taken over Berriman's duties in New York. L. J. Halderman, who for the past 10 years has been manager of the company's Kansas City branch, has been transferred to Chicago. F. A. Weisenberger assumes the managerial responsibilities of the Kansas City branch, being promoted from the Pittsburgh sales force.

J. J. Kelleher Again With Hercules' Contractors Division

Hercules Powder Company, Wilmington, Delaware, has announced that J. J. Kelleher is again associated with the contractors division of its explosives department.

Kelleher entered the explosives industry in 1915 and has been active in the contracting field for the past 10 years. His selling experience has given him a wide acquaintance in the field

Representatives of Dowell, Inc., from every principal oil-producing area of the country convened in Tulsa recently for the company's annual convention. Shown kneeling, from left to right, are: L. R. Austin, H. E. Hougen, P. Shelley, P. E. Fitzgerald, L. D. Smithers, C. M. Bryant, R. A. Brewer. First row, seated, are: J. Cummin, W. W. Love, M. W. Fruck, H. W. Ross, Dr. J. J. Grebe, J H. Adkison, C. E. Mangold, L. A. Courter, N. R. Crawford, vice president and general manager of Dowell Incorporated; A. P. Beutel, Dr. W. H. Dow, F. Holland, R. D. Shaw, sales manager. Second row, standing, are: Dr. W. R. Veazey, D. G. Hefley, W. D. Miller, W. B. Tennis, F. I. McConnell, W. E. Reardon, G. L. Leach, W. J. Russell, J. H. Courtner, J. G. Staudt, O. N. Maness, J. B. Stone, G. F. Williams, J. L. Coss. Third row, standing, are: W. S. Day, Ormand Barstow, N. D. Griswold, Dr. C. F. Prutton, A. O. Bedford, R. L. White, K. L. Flanders, Dr. F. N. Alquist, L. W. Lee, J. J. Johnson, C. Penhaligen, M. L. Stirling, O. W. Lyons. Fourth row, standing, are: J. H. Finney, D. L. Conner, C. T. Young and L. C. Chamberlain.

REED'S 'B-R' DRILLING BIT WITH WIRE LINE RETRACTABLE CORE BARREL

HARD FORMATION HEAD (Interchangeable with Soft Formation Head)

REED 'B-R' Drill Collar and 3-Blade Drilling Bit with Core Barrel in position

REED ROLLER BIT CO.

DID YOU KNOW OTIS HAS THEIR TUBING CLOSING TOOL ON THE MARKET IN AN IMPROVED FORM . . . THE TYPE G?

YES, it will positively seal the tubing for running under pressure in low pressure or heading wells as well as in high pressure ones.

WRITE TODAY

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CHEMICAL DRILLING MUD THINNER

—ECONOMICAL AND EFFICIENT
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Stands the gaff and gets the job done without scoring brake rims. See page 2100 Composite Catalog.

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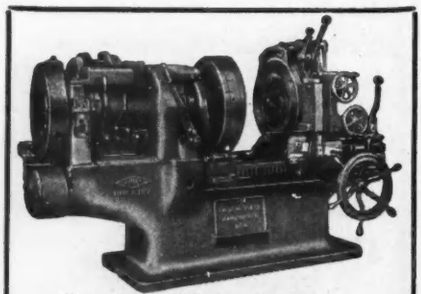

New Landis 4¾ Receding Chaser Pipe Threading Machine

COMPLETE LINES

Machine Tools—Metal Working Machinery—Bolt and Pipe Threading Machines—Electric Arc Spot and Butt Welders—Hand Power and Electric Traveling Cranes—Foundry and Forge Shop Equipment.

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NOTES FOR THE Equipment Buyer and User

and a thorough knowledge of contractors' requirements and problems. He will make his headquarters in the Wilmington office.

Meeting Held on Protective Coatings

James F. Fredrickson of John W. Masury & Son, was chairman of a meeting on Protective Coatings for Industry held recently at The Franklin Institute, New York, under auspices of the Bakelite Corporation. Arthur K. Doolittle, director of surface coating research for Carbide & Carbons Chemicals Corporation, discussed "Vinylite Resins for Can and Container Coatings"; Archie J. Weith, Research and Development Laboratories of Bakelite Corporation, spoke on "Improved Heat-Hardenable Coatings and New Methods of Applying Them," and Dr. Robert J. Moore, of the Varnish-Resin Division of Bakelite Corporation, discussed "Synthetic Resins in Corrosion-Resistant Paints."

Linde Air Products Company Has Booklet on Bending Pipe

A booklet describing the recently perfected wrinkle-bending method for bending pipe has been announced by The Linde Air Products Company, unit of Union Carbide and Carbon Corporation, New York. The process is finding wide application in the installation of cross-country pipe lines and other uses where pipe must be "tailored" to fit.

It depends upon the use of the oxy-acetylene flame for heating a narrow band about halfway around the pipe at the point at which a change in direction is desired. When this band has reached a red heat, the pipe is bent mechanically with the heated portion at the inside of the bend. This causes a slight upsetting of the heated metal and produces a change of direction of from 4 to 6 degrees. When greater changes in direction are required, a series of wrinkle bends result in a smooth, long sweep bend of any desired angle. The upset metal projects outwards from the inside of the bend, thus not interfering with the flow of fluid through the pipe and without restricting the diameter at the bend. The wrinkle-bending process is fully described in the booklet, together with suggestions for the mechanical bending of the pipe.

Shafer Bearing Corporation Announces New Catalog

Shafer Bearing Corporation has issued a new catalog, Number 15, listing additions of several types of mounted bearings and improvements in the design of adapter, press fit and super sealed types of older items in its mounted bearing line.

New types include standard duty welded pillow blocks, outboard flange units; adapter type flange and cartridge units, super sealed pillow blocks, flange units with welded housings, and cartridge units.

Road Weight Restrictions

The Four-Wheel Drive Auto Company, Clintonville, Wisconsin, has issued a new handbook on Truck and Trailer Size and Weight Restrictions for 1940. The publication offers a ready reference of authorative information on the regulations covering size and weight restrictions in each state of the union.

New Buda Bulletins

Buda Company, Harvey, Illinois, has issued Bulletins 981 and 982. The former spots the location of the company's stores and service stations in the oil country, and the latter is a power data chart for gas-gasoline engines manufactured by the company for oil field service.

Supply Personals

Max Wise, former engineer with Enardo Foundry & Manufacturing Company, Tulsa, is now associated with Bethlehem-International Supply Company at its Tulsa office.

R. S. Delamater, Wertzberger Derrick Company, Tulsa, has been promoted from draftsman to chief engineer.

Don C. Davis has resigned as president of the Arrow Supply Company, Inc., Fort Worth.

T. J. Hamilton, with Phillips Petroleum Company for 19 years, has been named sales manager for Mid-Continent Pump Supply Corporation, Tulsa.

Eugene H. Beard is a new sales representative for Jarecki Manufacturing Company at Tulsa. He was previously with Frick-Reid Supply Corporation.

R. M. Burk, National Supply Company, has been transferred from Tulsa to Los Angeles where he will become assistant to Vice President D. S. Faulkner. J. L. Evans has been appointed division manager for the company at Los Angeles.

CONTRACTING COMPLETE

PIPE LINE,
GENERAL
OIL FIELD
CONSTRUCTION

W. LEE WOOD
Wood Engineering & Construction Co.

Arp, Texas—Phone 74
Tyler Texas—Phone 4709

Squeaks from the Bull Wheel

Ambitious

I've worked hard these fifty years, Jim, and I feel that it's time for me to turn the business over to you and retire.

Ah, shucks, Pop, why don't you work a little longer, and then both of us can retire?

Of Course

"Don't you find that children brighten up the home?"

"Yes, our electric light bills are enormous."

Routine

Dad asked the kiddies what they had done during the day.

Lorraine, the 8-year-old, replied that she had washed the dishes. Six-year-old Betty said she had dried them.

Then not to slight the 4-year old, he asked, "And what did you do?"

"I picked up the pieces."

Sh-h

"Was the dinner a quiet affair?"

"It was, after the soup course."

Can't Slice a Pill, Though

Is golf really good for the health?

It's just like medicine, only instead of swallowing the pill you knock it around.

Got the Job

"What can you do, Sonny?"

"Anything."

"Can you file smoke?"

"Yes, sir, if you'll screw it in the vise for me."

Kid Stuff

"How many brothers and sisters have you?"

"Two half-brothers and one half-sister."

"Are you the only whole one in the family?"

Slip-Proof

"Now please be careful with my new polished hardwood floors."

"Don't worry, Madam, I won't slip with these here hobnailed shoes on."

Nosey, Aren't They?

Bank teller: Sorry, Madam, but your account is already quite a bit overdrawn.

Lady: Well, suppose it is? Haven't I a right to do what I please with my own account?

Now He's Bike-less

Willie, was it a bad accident when you and the other boy ran into each other on your bicycles?

Well, he was knocked speechless and my bike was knocked spokeless.

Paying Boarders Only

Good morning; would you like to buy some insect powder?

No; I have no use for the stuff.

Good. Then I'll take that room you're advertising.

Simple

Officer—How on earth did you make those four straight hits? The range is 600 yards and your sights are set for 300 yards.

Rookie—See that little rock half way along? I'm bouncing them offa that.

Mayhem at Mass

"A person must be very brave these days to go to church."

"Why do you say that?"

"I heard papa tell mamma last Sunday there was a big shot in the pulpit, the canon was in the vestry, the choir murdered the anthem, and the organist drowned the choir."

Lull in Her Life

A film actress was applying for a passport.

"Unmarried?"

"Occasionally."

Ain't It the Truth?

"Why did you send for your daughter?"

"I found it too expensive to have her living in the city supporting herself."

Early to Bed

And now let me warn you that early hours are the rule in this store.

That's good. You can't close any too early for me.

Button, Button

First it was love. He fascinated me—and I kissed him.

Yeah, I know. Then he began to unfascinate you—and you slapped him.

A Prescription

A slightly deaf old sportsman, feeling run down, consulted the doctor, who after examination prescribed carrot, and plenty of it.

"How shall I take it?"

"Anyway you like it, and as much as you like."

A month later the patient returned in bursting health.

"Capital," said the doctor, "carry on with the carrot."

"The what?—carrot? Carrot, good heavens! I thought you said claret. I've been drinking three bottles a day for the last four weeks."

Must Be Politicians

"Say, you, why ain't you working?"

"We's working, boss. We's carrying this plank up to the mill."

"What plank? I don't see any plank."

"Well, fo' de land's sake, Abe, ef we ain't gone an' forgot de plank."

Usual Precaution

Cook: Did they say anything about the cooking?

New Maid: No, but I noticed them praying before they started eating.

Charge It

"I would like to open an account at this bank, please."

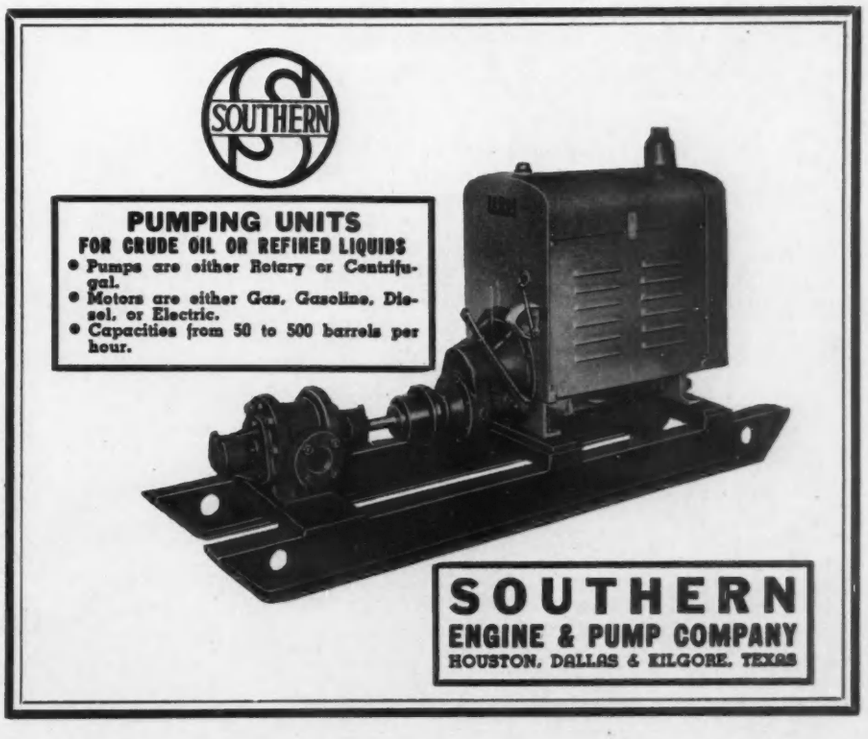
"We shall be very glad to accommodate you. What amount do you wish to deposit?"

"Oh, I mean a regular charge account such as I have at the department stores."

Poor Business Deal

Your first wife informs me you are three months behind with your alimony.

You're right, Judge, this second wife of mine hasn't turned out to be anywhere near the worker I expected her to be.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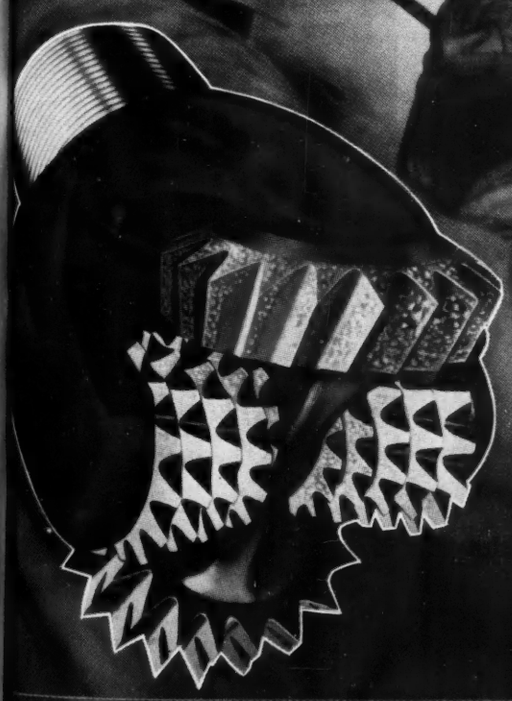

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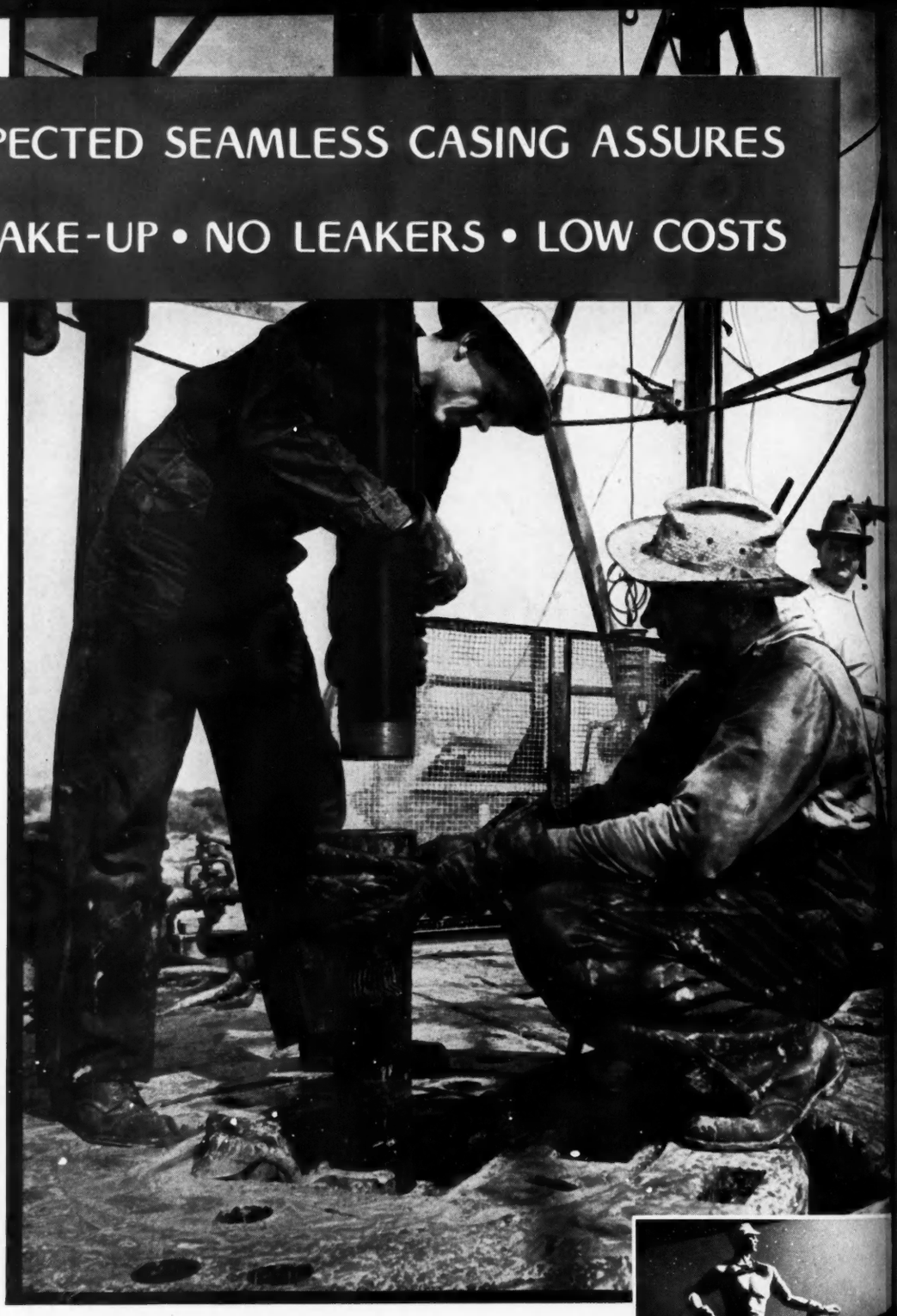

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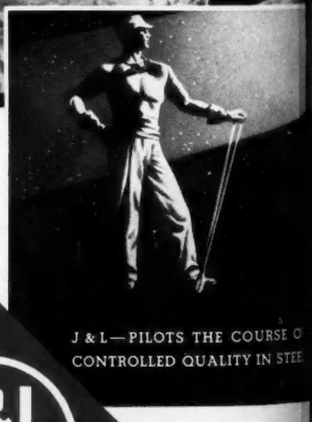

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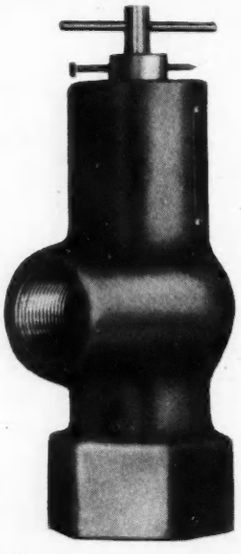

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LOOKING AHEAD

WITH THE EDITOR

Mud Conditioning and Control.

THE first rotary drilling fluid was water, but it was soon observed that the mud made from circulation of the water was a better product than the water itself. The more viscous mixture brought the cuttings to the surface and served as a good lubricant. Operators soon observed the plastic action of the mud on the walls of the hole, as against the more cutting and disturbing action of water. Chemistry and engineering played small parts in the selection of drilling clays, but the operator unwittingly learned much by trial and error. The first mud used was just that—clay mixed with water.

Drilling mud used prior to 1920 was judged mostly by its appearance and "feel." The driller examined the mud that stuck to his fingers when he dipped them into the pit. During particularly trying times he also smelled and tasted the mud. Little attention was paid to weight and viscosity, so far as records were concerned.

A more serious study of mud has developed a control of drilling fluid that will safely carry the operator through the average difficulty. Various characteristics are maintained through chemical and mechanical measures.

Many operators, however, do not understand or appreciate the factors involved in mud control.

Close mud control is the best guard against trouble in doubtful or uncharted formations. Frequent checks reveal warnings that often prevent trouble.

THE OIL WEEKLY will soon carry an article on the value of mud conditioning and use of suitable drilling fluids.

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